

JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

THIRD SERIES

VOL. 46 No. 16

26 JUNE 1939

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SACKVILLE ST., DUBLIN, 1841, from *The Scenery and Antiquities of Ireland*, by N. P. Willis and J. S. Coyne, illustrated by W. H. Bartlett

JOURNAL OF THE ROYAL INSTITUTE *of* BRITISH ARCHITECTS

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Journal

THE LONDON ARCHITECTURE BRONZE MEDAL

The London Architecture Medal for 1938 has been awarded to Mr. G. Grey Wornum [F.] for the new Central Depot for the City of Westminster in Gatliff Road. The building will be familiar to readers, since it was illustrated in the JOURNAL of 20 February last. Apart from the undoubted merits of this building, it can be said that in one sense the medal has been "owing" to Mr. Wornum for some time. Many people have thought it a little hard on him that the R.I.B.A. should have decided their own building was ineligible for the medal, though it will be generally agreed they could not have done otherwise. Congratulations will certainly be forthcoming from all members on the honour accorded to Mr. Wornum by the Medal Jury—an honour perhaps doubly earned. It is typical of him to have associated with the design of the Westminster Depot the name of his responsible assistant, Mr. Lionel Smith [A.].

ANNUAL ELECTION TO COUNCIL

The result of the Election to Council is printed on page 832. It is interesting to note that the number of voting papers received has again increased, and now is almost twice as great as the number received in any year before 1935. After the announcement of the election results an interesting discussion on various sides of Institute work, affecting chiefly the Public Relations, the Salaried Members and the Official Architects' committees, was opened by Mr. Daniel Roth [A.]. The whole of this will be published in the next number of the JOURNAL.

R.I.B.A. REPORT ON ARCHITECT REFUGEES

On page 826 of this number of the JOURNAL is published the Report of the Special Committee set up by Council in January "to enquire into the whole problem of refugees with a view to supplying Council with the information necessary to enable them to formulate a policy to be followed in this matter." The Committee, under the chairmanship of Mr. E. C. Bewlay [F.], reported in April, and the Report was accepted by the Executive at its April meeting. The letter notifying

the Committee of the acceptance of the Report is also published, with correspondence with the Aliens Department of the Home Office relative to the recommendations in the Report, which could not be carried out without the collaboration of the Home Office. Members will see that this collaboration has been promised.

The policy of the R.I.B.A. in regard to the refugee problem as it affects the profession is of the very greatest importance and it is hoped that the Report now published will receive the closest consideration of all members, bearing in mind the profession's obligations to its fellow architects.

The Report is a valuable piece of Institute work, and has received favourable comment not only from the Council of the Institute, by whom it was received with acclamation, but also from the Home Office. Steps are now being taken to bring the Report to the notice of the public through the Press.

In the Council's formal recognition of the voluntary Architects' Refugee Committee is implied the profession's awareness of its humanitarian obligations, which it was clearly recognised could not be discharged by a Committee of the Royal Institute whose scope was quite properly only professional. But the humanitarian side of the refugee problem is recognised as being of great urgency and importance. Every architect can do something to help these persecuted colleagues of ours by responding to the appeal from the Architects' Refugee Committee which is published on page 831.

THE GARDEN AND LANDSCAPE EXHIBITION

"Garden and Landscape," the Exhibition of the Institute of Landscape Architects, opened at the R.I.B.A. on Wednesday last, as we were going to press, and there has not been time to give it the full review that a show of such importance and delight deserves. The I.L.A. is a young body which in the few years that it has existed has established not only the need for such an organisation of professional landscape architects but also, and of course much more important, has established in general consciousness the fundamentals of the ideals of the art they practise.

The I.L.A. is a body of practising landscape architects, and, as Mr. Bowes-Lyon who opened the Exhibition said in a speech of rare grace and understanding, is a body charged with a creative duty. The I.L.A. is not a body of people whose chief interest is in preserving the past, they, like architects, are building the future landscape. The Exhibition shows how the ideas of the leading landscape architects are moving. It is brilliantly clear in its exposition and is fresh and lively, the screens are all pleasant to look at and literally "attractive." The Exhibition has in fact avoided the faults of some didactic shows by not trying to tell too much or to tell it with such emphatic tub-thumps that all but the bravest devotees are frightened away. It is in fact a thoroughly good exhibition and the organisers of it, particularly Dr. Adams, Mr. and Mrs. Jellicoe, Mr. Sudell and Mr. Hughes, who were members of the Exhibition Committee with Mr. Tunnard, who designed the Exhibition, all are to be congratulated and thanked.

HELP FOR TRAVELLING ARCHITECTS

The R.I.B.A. is always glad to help members who are travelling abroad, and for many years has given a "travelling card" printed in several languages as a general introduction; in addition it is often possible to give personal introductions, but as most members fully realise the giving of personal introductions can easily become worthless if they are distributed without very careful consideration of the claims of each applicant. Broadly speaking, personal introductions are only given when the applicant is able to make out a case which proves the necessity for him to meet a particular architect. It will be understood that our distinguished Honorary Corresponding Members are men who cannot be expected to act as unofficial travel agencies, and even less can they be expected to occupy their time satisfying the quite natural desires of a British traveller who would "just like a chance of meeting Professor — because I admire his buildings so much."

Partly as a result of the recommendations made and the action taken in recent years by the Foreign Relations Committee, we have extended the number of the Honorary Corresponding Members to include representatives of almost all schools of work in almost every country in the world. Also we have closer relations than ever before with the architectural societies who have always been willing to help travelling British architects. The purpose of this note is not only to draw attention to these facilities but to ask members who want help from the R.I.B.A. to assist the R.I.B.A. staff by giving as full information as possible of their route and the purpose of their travels abroad. It is impossible for the Institute to be as helpful as it might be to a member who merely says in his letter, as many do, "I am going to France in three days, and would like introductions to French architects." Always we want as long notice as possible, because in many cases considerable research and enquiry is necessary before we can decide which are the most suitable con-

tacts for us to promote. Also, without definite information about the enquirer's interests and professional standing, we can do little. It is obviously useless to give a broadcast introduction to archaeologists and architects of all kinds for the use of an architect who is interested only in, for instance, the extremer phases of modern work. The introductions suitable for a man travelling vaguely on holiday may be useless to a busy local authority official seeking precedents abroad to help him design some very specialised structure.

Quite often the R.I.B.A. is asked to prepare itineraries and give detailed lists of buildings to visit. The *JOURNAL Review of Periodicals* is published to keep members informed about contemporary building, and anyone by glancing through recent Reviews, even if he cannot study the periodicals themselves, can compile a list in every way as complete as any that the Library can give him. Although the Library will always help members to the utmost of the ability of its staff, it must be realised that it is a most uneconomic use of the Library machinery to employ it to repeat for individuals what has already been done for the profession as a whole.

It might seem unnecessary to ask members to bear these points in mind, but experience has shown that it is, in fact, most necessary as a means of assuring that this system of introductions is worked efficiently with the greatest possible benefit to members, and with the least possible trouble to our colleagues in other countries.

THE GOLDEN JUBILEE OF THE ONTARIO ASSOCIATION OF ARCHITECTS

The Ontario Association of Architects will be celebrating its Golden Jubilee this year immediately after the close of the International Congress in Washington, which is being held between 24 and 30 September. Any members of the R.I.B.A. or its Allied Societies who may be in Canada at the time are cordially invited to communicate with the Organising Committee at the address of the Secretary of the Ontario Association of Architects, 74 King Street East, Toronto 2, so that invitations may be sent to them to be present at the celebrations.

THE A.B.S. DANCE

On Friday, 30 June, the A.B.S. is holding a dance at the R.I.B.A. from 7 p.m. to 1 a.m. Of the two obvious reasons for coming, interest in the A.B.S. and pleasure in dancing, the first should need no emphasis here and the second will be its own advocate for dance-minded architects. Tickets are 10 shillings each.

ANOTHER MUSIC GROUP SCHUBERT SOCIETY CONCERT

The Music Group is arranging for a concert (of which details will be published later on), to be given by the Schubert Society on 31 October, when the New Hungarian String Quartet will play. Members will remember the excellent concert given by these players last year.

LORD LEE OF FAREHAM'S PICTURE GALLERY AT AVENING, GLOUCESTERSHIRE

A special informal meeting held at the R.I.B.A. on Thursday, 15 June 1939

SIR KENNETH CLARK [*Hon. A.*], DIRECTOR OF THE NATIONAL GALLERY, IN THE CHAIR

I would like to make it plain, at the outset, that my status here to-night is that of a collector only—not an architect, and although the R.I.B.A. was gracious enough (thirteen years ago) to elect me an Hon. Fellow—a high honour which I greatly prize—I should never dream of interpreting it as conferring upon me either the right or the ability to design even a potting shed. But, as a devout lover of pictures and other works of art, I have been so frequently baffled and pained by my inability to see and enjoy them to the best advantage, under the conditions of lighting which prevail in many public and private galleries, that for several years past I have felt an urge to study the problem for myself, and to evolve a practical system which shall, at any rate, do justice to the particular objects which have come into my possession, and to make them available for the enjoyment of friends and students, as well as of myself.

THE PROPER FUNCTION OF A GALLERY

There are, of course, various ideas as to the proper function of a picture gallery. It may be designed, primarily, as an architectural masterpiece (I am afraid that is what is the matter with most of them!).

Or, it may be planned and equipped as an agreeable and cheerful meeting place for those who wish to enjoy social intercourse, in a cultural environment—provided that the latter is not too insistent or distracting!

Or, it may be conceived as a scientific, but seemingly, setting for the display of pictures and other works of art, under conditions of lighting (whether by day or night) which are best calculated to do justice to the merits of the objects themselves, without unduly diminishing the comfort or convenience of the spectator, and at the same time to ensure the reasonable immunity of the exhibits from the perils of damp, changes of temperature, or visitations by marauders.

I need hardly say that I, personally, am an advocate of this third conception of a gallery, and during the past decade have tinkered away at the problem in an amateurish way; firstly at White Lodge, where I resided for some years (but where the structural limitations of the house made a full experiment impracticable), and now at Avening, where I have just built an entirely new gallery annexe to an existing late Regency rectory. The exterior

as I found it was that of a simple homely house of the comparatively rare period of William IV: Whatever its merits, it had no resemblance, either in appearance or accommodation, to a picture gallery. And yet I could not do without one, if I was to retain and enjoy the accumulations of what some may regard as the ill-spent autumn of a once public career. Nor could I insult any eminent architect by inviting him to associate himself with such an incongruous mating as that of a blameless rectory with a modern emporium of works of art—including nudes and heaven knows what besides! So I decided to fend for myself, and here my gallery which I shall describe to-night is the result. It may, or may not, be evident from the general view that the windows and porch are dummies, and afford no access to the building itself. The architectural elevation (if it may be so designated without presumption or offence to a great profession) is set back 25 feet from the frontage of the original house, and is subordinated entirely to the style of the latter, in all such details as mouldings, windowings, visible slate roof, colour of shutters, etc. It is, moreover, similarly faced with stucco, which in this case is waterproofed with "Pudlo" cement and reinforced behind with expanded metal.

The only other special feature of the exterior is that the gallery rooms are entirely top-lit, but that the glazing comes below the slating course of the roof, and so is not visible from the ground.

I now come to the *internal* arrangements, which it is my main concern to explain to you to-night. The section (p. 806) gives all relevant particulars, but for lay-members of this audience, perhaps, the photographs which follow may give a better general idea of the interior of the gallery rooms, and of the lighting of the pictures—which is the goal to which everything else has been subordinated.

[*Lord Lee then showed and explained views of the interior of the gallery.*]

LIGHTING

As already explained, the rooms are lit exclusively from the top, the light being diffused and evenly distributed by passing first through the outer glazing of

double armoured glass, and then, at a slight angle of diversion, through the flat ground-glass laylights of the ceiling, which are 4 feet wide, 14 feet from the floor, and start 22 inches away from the wall. By this means, whilst the light falling upon the walls appears to come almost vertically from above them, it does so actually at an acute angle which prevents it from striking back at the spectator's eye, or from reflecting the skylights in the glass (if any) of the pictures. Moreover, at no time of day does sunlight fall directly on the walls. If, however, in very bright weather, the amount of light coming in is too great, it can be subdued, or cut down drastically, by a series of holland roller spring blinds which are fixed close above the laylights, and which can be pulled across horizontally from the wall towards the velarium, to any extent desired. In this way the illumination of any given wall, or any section of it, can instantly be reduced relatively to that of others, and the amount of light falling upon individual pictures can be regulated as necessary. Dark pictures naturally require stronger illumination than light ones, and by a manipulation of the blinds an effect of even lighting on all four walls

can be substantially maintained throughout the hours of daylight.

At night time the artificial lighting can be regulated equally effectively by the simple expedients :

- (a) of varying, as requisite, the number and the voltage of the electric bulbs ; and
- (b) of controlling the lighting of each section of the walls by separate switches.

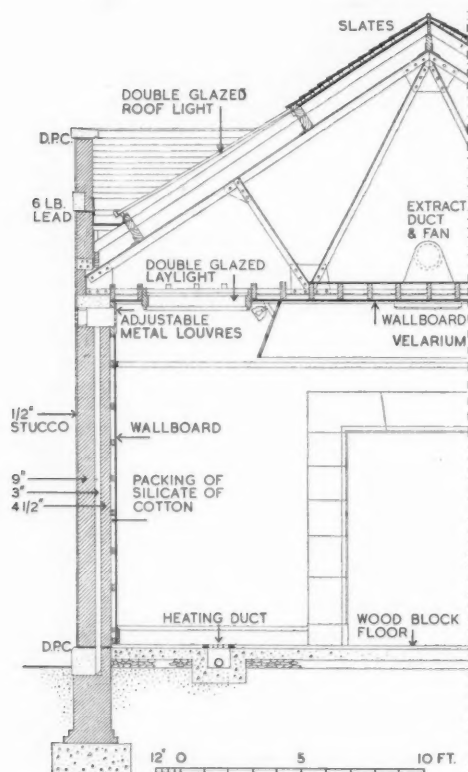
In the case of either day or night lighting the main object aimed at is the same ; that is, to secure an apparently evenly diffused illumination on *all* pictures alike, whilst preventing any direct light from falling upon the spectator, or upon the floors. Moreover, the steep angle from which the light comes enables the spectator to make a close examination of the surface of the picture without the shadow of his own head getting in the way.

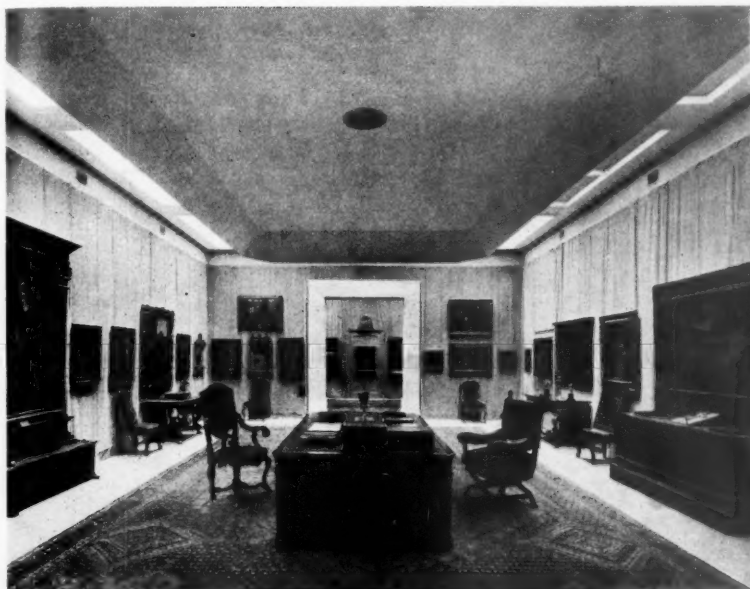
A minor refinement is to secure the equal lighting of the corners of the rooms, which in most galleries are apt to be the darkest portions of the walls. This is effected by cutting off the four angles of the velarium (or hood) in such a way as to make it a kind of elongated octagon, instead of a plain rectangle. This is clearly shown in the photographs.

Of the velarium (or hood) itself, I will merely say that, whilst in principle it only follows standard practice, its design and method of construction have some features of novelty. It is in effect a shallow inverted tray, made of $\frac{1}{4}$ inch "Masonite" sheets, stiffened by a 2 in. by $\frac{1}{2}$ in. oak framing, and held in position by wrought iron flat brackets (at 4 feet intervals), which are carried through the ceiling and secured above it. The depth of the hood is 27 inches, (or 24 in the case of the smaller gallery No. 1), and it is painted a broken white like the ceiling, on the inside, and dead black on the outside. In the centre of the ceiling, and above it, is a powerful electric exhaust fan, which carries off any stale air and keeps the room properly ventilated. There are, in addition, 9 in. by 9 in. ventilators, with adjustable metal louvres, at 8 feet intervals all round the walls, a foot below the ceiling.

The angle of the hood is a very important detail, and is designed so that the lower edge of the shaft of light coming from above (whether by day or by night) strikes at the point where the walls meet the floor ; whilst the upper edge strikes the walls at about 2 feet below the cornice. This angle is determined empirically by bending the edge of the hood, before fixing, up to a long straight edge reaching from the inner margin of the laylight to the junction of the wall and the floor. In the case of artificial illumination, the shaft of light is similarly controlled between the lower edge of the hood and the top edges of the silvered tin reflectors, which are bent over just enough to meet a straight edge carried from the electric bulbs to the highest point of the wall where direct light is required to fall.

The pictures hang, by chains and hooks, which can



*The gallery by daylight**A corner of the velarium*

easily be slid along the *fixed steel rail*, and the surface of the walls behind them is covered with loosely draped, light "Velasquez" grey, cotton velour which provides a neutral, becoming, and inexpensive background for pictures of almost any school. The colour, however, can, of course, be varied to suit individual taste. The chains are painted to match the wall-coverings, and are very inconspicuous.

WALL CONSTRUCTION

One other feature of paramount importance is the method of construction of the walls themselves, and here the essential requisite aimed at was to ensure the elimination, from the very start, of any risk of that dampness which makes all new galleries, and in particular the temporary buildings run up for "World's Fairs" or International Exhibitions, a peril and a terror to owners or lenders of pictures. I know only too well, from bitter experience, the risks that Old Masters, especially early Italian panels, run, when peremptorily borrowed and callously hung on new plaster walls, and, more often than not, definite damage, varying in degree and character, is sustained by the unfortunate and helpless lenders. If plaster is used in the construction or facings of the walls, this is almost inevitable—unless at least 12 months are allowed to elapse between the completion of the gallery and the hanging of the pictures—which is usually out of the question. I determined,

therefore, that no plaster of any kind should be used in the wallings of my gallery at Avening, and that they must be "bone-dry" from the moment they were finished, and at all times afterwards. This, I think I may claim, was effectively accomplished; and as a result, it was possible, and perfectly safe, to hang delicate pictures on the walls from the very day that the latter were finished. Indeed, this was actually done when the gallery was completed in October last, and, in spite of a long and inclement winter, no trace of damp has been discernible on the walls, and no injury has been suffered by any of the pictures.

HEATING AND VENTILATION

The problem of warming the gallery required a good deal of anxious thought, and after careful consideration of the various modern expedients, such as panel heating, ceiling heating, ordinary standing radiators, etc., I came to the conclusion that the oldest and simplest system, of cast iron circulation mains (four inches in diameter), carried in channels sunk 2 feet below the floors, and 4 feet away from the walls, covered in by cast iron grille floor plates, was, on the whole, the safest and most efficient—besides being the cheapest. Moreover it does not occupy, or sterilise, any of the hanging space on the walls.

At Avening the volume of warm air rising from the hot pipes is damped down by the laying of porous string

matting, of the same kind that covers the floor of the House of Commons, over a 6 foot margin all round the rooms; the central area of the floors being covered with Oriental carpets. This not only disguises the existence of the gratings and pipes, but effects a more equal diffusion of the heat throughout the rooms. There are also various arrangements installed for the reception of burglars, or other unwelcome visitors. These are *not* shown on the plan, and beyond saying that they include mechanical, electrical, and canine protection, I propose to maintain a prudent reticence as to their precise nature and position!

COST

The only remaining feature to which I wish to call attention is the very *moderate cost* of these methods of construction. Allowing that, in this particular case, there were no architects' or surveyors' fees, the total cost of the four new gallery rooms and a small picture store, including all decoration and a somewhat elaborate electric lighting installation, was in the neighbourhood of £3,500. This does not mean that cheap or inferior materials were used. On the contrary, everything was

of the best quality, and the carrying out of the work reflects the greatest credit upon the local and long-established firm of builders which I employed—Messrs. Holborow & Sons, of Tetbury. Mr. Holborow himself is here to-night, and will, I am sure, be glad to explain any technical points which may be raised.

In conclusion, I need hardly add that I myself shall be only too pleased to answer any questions that you may care to put to me, and if any of the audience can spare the time to come down to Avening to inspect the gallery, and to judge of the lighting effects, it will give me great pleasure to welcome them and to explain things on the spot. In the meantime, I trust that all who are present to-night, and who will be good enough to join in the discussion, will not hesitate to criticise, and to speak their minds freely. It is no part of my case to contend that these experiments, which I have been conducting mainly for my own amusement and benefit, represent the ultimate word in gallery construction, but I do venture to hope that they may mark a certain advance in the elucidation of a very difficult, and at the same time highly important, problem.

VOTE OF THANKS AND DISCUSSION

The CHAIRMAN, Sir Kenneth Clark [*Hon. A.*], in thanking Lord Lee, described his gallery as the most agreeable small gallery that he had ever been in; it was evenly lighted, and without glare, thanks to the velarium. There was an impression of restfulness and yet, although there was no glare in the centre of the room which was relatively in shadow, there was not that feeling of artificiality often found where the lighting had been too artfully contrived. This effect, he thought, was in part due to the calculated relation between the lighting itself and the daylight and the velarium in relation to the walls.

Sir Kenneth Clark then discussed the difficulty of designing a velarium for use in the greatly increased scale necessary in a public gallery without its becoming oppressive. That raised, he said, a further problem of the height of galleries. Picture galleries were generally much higher than they needed to be to-day; almost all of them had been built when it was the fashion to hang pictures three or four deep on the walls, but now taste had changed, and we had only one or two rows of pictures, so that there was this vast waste space above them. It was a question now for all designers of picture galleries whether that could be eliminated, and, if so, whether the lighting could be controlled, and whether such a device as Lord Lee's velarium could be used.

Raising one or two general points concerned with gallery design, Sir Kenneth Clark suggested that sometimes when one saw these elaborate devices which were now used for the direction of light, one was inclined to feel that perhaps too much attention could be paid to optical problems and not quite enough to those problems which were presented in the enjoyment of works of art by an accumulation of causes—the whole setting, the whole circumstances, in which the pictures were seen. One could go to many old galleries in Europe, which had not even been designed as

picture galleries, and feel that the pictures looked perfectly at home and were easily enjoyed; so also one could go to some very modern gallery and feel that in spite of a great deal of calculation the pictures did not look comfortable and that the gallery had a depressing effect.

Apart from optical problems, there was the question of our relation with the pictures, and the question of the pictures' relation with the gallery. In a picture gallery we could not be isolated from the pictures. That was the great disadvantage of all those scientific or pseudo-scientific galleries in which the spectator was kept in the dark and the light concentrated on the picture. We had, so to speak, to breathe the same air as the picture; otherwise we had the impression of being removed from it much as one was removed from an object in a shop window. That *rapprochement* between spectator and picture which he believed all sensitive people felt essential to their enjoyment of a great work of art was lost.

This separation of picture from public reached a climax in that, to him, odious system of spot lighting which flourished some years ago in America, and which was even visible here, where the room was in darkness and the pictures shone out from the wall as if they had been illuminated from behind; one had no sensation of the reality of the picture at all, but only the disturbing feeling of transparencies set round the wall.

Next Sir Kenneth referred to the question of the pictures' relation to the gallery. Pictures had all been painted with the artist having at the back of his mind certain common phenomena of light and shadow. If one put a picture in a gallery where those ordinary optical laws had been contradicted by some elaborate process, the picture looked uncomfortable. Even the elimination of shadows in the corner would result in a certain artificiality if it was exaggerated.



The gallery artificially lit

Where the light was so controlled that there was an absolutely even light round the room, the room ceased to be a cube with the ordinary properties of a cube, and became flattened out, and all those pictures which had been conceived in ordinary terms of light and shade became unrelated to the gallery as a whole. That again had reached its climax in America, where in many picture galleries daylight was not allowed to enter the gallery at all, because, as the architects quite properly pointed out, daylight was constantly changing, and by their system an artificial daylight could be established which was perfectly steady.

That sounded admirable, but actually it had a most deadening effect. All who cared for pictures and went often to galleries derived the greatest joy from changes of light, from coming into a gallery at an unusual hour when the light had a certain quality, and seeing a picture for the first time in a new light. One experienced all over again one's joy in that picture. That happened to him almost every day in the National Gallery, but it would not happen if their system of lighting, which, heaven knows, was imperfect enough, was static and perfect and controlled.

Next Sir Kenneth pointed out that different schools of painting required entirely different kinds of lighting. The Italian school, which was not an impressionist school (that is to say, not concerned directly with visual sensations, but with ideated sensations), was, he thought, best displayed in top lighting, or what was known as high side lighting, which was almost the same thing, or, at any rate, had in many ways the same effect. The Italian pictures needed a diffused light. Dutch pictures, however, had been painted in concentrated side light, and to be hung in rooms with a side light, so that Dutch pictures should be shown in side-lit rooms. That, he suggested, was always a great grief to architects, because they thought that side-lit rooms spoilt their façades; but the fact remained that if the Dutch pictures in the National Gallery, in the two Dutch rooms upstairs, could be shown in side-lit rooms, they would acquire a new quality, a new depth and

richness, which, he thought, would surprise even those who know them best.

For that reason, he thought, there was much to be said for the old gallery system, which was in its classical form in Dresden, where the great galleries were down the middle for the large Italian pictures, and a row of cabinets along the side for the small Dutch pictures. He doubted whether that plan for a gallery had ever been beaten.

There was a great deal to be said for galleries in old buildings; in an old building there were happy accidents and felicities which no architects could foresee. In the Venice Academy there were accidents due to the strange jumble of old buildings. He pleaded, as a lover of painting, that galleries should not be made too regular, or too "scientific."

In conclusion, he suggested that Lord Lee's gallery was a perfect combination of science with those human or humane qualities which he had been mentioning. The lighting was directed so that there was no reflection, but one did not feel on going into it that there was too much top hamper, that there were too many elaborate gadgets in the sky, and one did not feel that the amenities, the humanities, had been sacrificed to theory.

The meeting was then opened for discussion.

Mr. O. P. MILNE [F.], having referred to the collection of pictures, said that the effect of the gallery, inside, was charming and attractive, one felt that one was in a room in which it would be possible, almost, to live every day of one's life, except that it was top-lit, and for living one wanted side lights as well. The whole thing had a very human and delightful touch. The grey-green velvet wall covering was extraordinarily happy, and a most admirable background for the pictures.

Outside, he felt that Lord Lee had not touched the architecture with quite the same thoroughness. He had put in sham windows with shutters and a sham door. The door was in a way a real one, because it opened into a room in which garden chairs and so on could be put, but it did not lead into the gallery. There was, of course, plenty of precedent for that

in Georgian architecture, but he felt that if Lord Lee were doing it over again he would perhaps make the outside wall with perhaps a niche in the middle with a fine statue at the end of a garden vista, or something else which would not have needed anything sham at all, and which would have hinted that inside were to be found works of art.

Sir ROBERT WITT said that he first of all wanted to praise Lord Lee's courage in coming to this Institute! A den of hungry architects who, as they heard the praise bestowed upon Lord Lee's unaided efforts, must surely have feared that they would become hungrier and hungrier! But, if Lord Lee's courage was great and unexampled, so also was the generosity of the Royal Institute which had welcomed such an outsider. That showed not only a very generous and a very liberal spirit, but also confidence in the architect's ability to hold his own in a world which desired beautiful and lovely buildings.

Lord Lee's example of creating a building of moderate size at very moderate cost should be an encouragement to others to do the same. Every municipality, and almost every village council, should have its own little gallery of this kind. He thought that perhaps the days in which galleries grew larger and larger were beginning to pass; we were hungering for something more intimate, a place to which we could go without much trouble and where we would know that the contents would be changed and rearranged from time to time. A gallery rearranged was almost a new collection. If Lord Lee's example had that effect, it would have added greatly to the artistic riches and to the opportunities of appreciation for which this country hungered so much.

Mr. E. L. BIRD [A.] said that he had been able to study the drawings and had several comments and some criticisms to make. He thought that obviously Lord Lee's third conception of a gallery, namely, that it was a machine for looking at pictures in, must be accepted. From the purely technical point of view there were two problems to be met, first, that the pictures should be seen in the best possible way, and, second, that they should be protected against their three principal enemies: fire, damp, and the burglar.

For the lighting which Lord Lee had adopted he had nothing but praise. The principles of that lighting had been originally worked out by Mr. Hurst Seager and published in two papers in the R.I.B.A. JOURNAL, and subsequently amplified by Technical Paper No. 6, "The Natural Lighting of Picture Galleries," of the D.S.I.R. Lord Lee, whether he knew of that work or not, had improved on the rather dull scientific formulæ which had been evolved in those documents.

As to the second problem, he suggested first of all that in a building which housed valuable pictures, a roof containing a very large amount of wood was not desirable and that a fully fire-resisting construction was essential. Moreover, he would also like to know something of the quality of the electric light installation which was placed in the timber roof. A prolific cause of fire was the short-circuit due to defective or decayed electrical work, protection against which lay partly in the quality of the materials but principally in the electrical design and workmanship. He suggested it was desirable, where very valuable objects were concerned, to employ an electrical consultant who would specify the quality and workmanship of the installation and see that his specification was carried out; otherwise a careless fitter might provide the conditions which in due course would lead to a short-circuit and a fire. Art gallery directors would at least be

advised to consult H.M. Office of Works, whose electrical engineers had studied this problem very thoroughly, or alternatively the Institution of Electrical Engineers.

On the question of damp, there were some peculiarities in the sectional drawings the reasons for which were a little difficult to understand. The double wall was built, for instance, with the thick leaf on the outside and the thin leaf on the inside—a reversal of the usual procedure.

He suggested to directors of galleries that just as one would consult, say, the British Museum on a question of antiquities, so it was worth while consulting the Building Research Station, the country's authority on questions relating to structures, when a structural problem had to be faced, the more so as the Building Research Station had a very considerable reputation as a world authority on the causes, cure and prevention of damp walls.*

Mr. S. C. KAINES-SMITH (Director of the City Art Gallery, Birmingham) felt that probably the extraordinarily successful solution which Lord Lee had applied to lighting problems in his gallery was really largely based upon the saving quality of scale. As the head of an art gallery which had the customary large rooms, he felt strongly that it was the robbing of pictures of their natural context which made them difficult to enjoy. Added to that was the fact that we had to have large numbers of pictures in a single room, making it very difficult to concentrate attention on any one of them at any one time, and also we had to have specialised lighting, so that the whole atmosphere became completely unnatural. That seemed to mean that we were arriving at a time when the day of the big gallery was necessarily coming to an end. He did not entirely agree with that, but he felt strongly that as far as possible pictures should be restored to something like a humanised context by combining them with furniture and hangings, and by giving them as normal a lighting as possible.

Much of what Sir Robert Witt had suggested was being done. The large provincial towns were increasing the number of their branch museums and using old houses, as far as they could possibly be used, for pictures and furniture, and building little galleries—60 feet by 30 feet was a very sound size.

What Lord Lee had told us that day was a revelation to a great many of us who were constantly battling with the problem of lighting a gallery wall without making the rest of the room impossible to walk about in, and who wanted to make the spectator feel a real human being and not a fish on the wrong side of the glass of an aquarium. If we could adopt those principles and adapt them to the necessities of the rooms of big provincial galleries, we were going to make those galleries a great deal more human. He concluded by saying how glad he had been to have had the opportunity of hearing what Lord Lee had been able to do, and of seeing the extraordinarily illuminating pictures that he had shown us.

A MEMBER of the R.I.B.A., who was, at present, connected with the design of a new provincial gallery, spoke highly of the Boymans Museum at Rotterdam, where there was a system of lighting somewhat similar to that which Lord Lee had worked out for his own gallery, but with one great difference. At the Boymans gallery a system of *louvre*s had been devised

*Mr. Bird also suggested that the omission of a dampcourse at gutter level would create permanent dampness in the walls. It was subsequently pointed out, however, that this dampcourse had been provided though not shown on the drawings. The drawing reproduced has been amended accordingly.—EDITOR.

to provide a directional light on to the walls, and the underside of the velarium was perfectly flat and level, or thereabouts, with the bottom of the louvres, which really constituted the lay light. That was possibly an improvement, since there was no sharp contrast between dark and light.

This speaker said that he had never before seen pictures under such pleasant conditions.

He also referred to the Boymans heating and ventilation, which was performed by a plenum system working to a humidity range of 15 deg., which he had been assured was for their purposes all that was required; he had been told by so many directors of picture galleries and other experts that a much smaller range than that was desirable. He requested Lord Lee's views on that point.

Mr. G. H. JENKINS [F.] asked Lord Lee a question about the ventilation of his gallery. He did not quite understand what was the purpose of the ventilating panels at the top of the walls, and whether fresh air entered the heating pipe trench in the floor.

He suggested that the system of double glasses in the outside skylights and single frosted glass in the lay lights would, no doubt, work very well in the clear atmosphere of the country, but would be difficult to keep clean in London.

The angle of the lighting, he suggested, was, no doubt, admirable for Italian pictures, but it was very steep. If such lighting were used for futuristic or other pictures, where the paints were laid on in heavy flakes, shadows would be thrown by the flakes of the paint. That angle seemed really to have arisen from the desire to keep the slate roof appearance, and not show the skylight from the ground; but if the skylight had been carried slightly higher, the centre of the gallery would still have been kept dark, which was essential if one was to avoid seeing oneself in glazed pictures, and yet the angle of incidence of the light on the pictures on the walls would have been improved.

It was, he suggested, almost impossible to avoid reflections completely.

Mr. CHARLES HOLDEN [F.] said that he had seen not only this gallery but Lord Lee's previous gallery in White Lodge. The original experiment had been much hampered by the fact that it had to be in an existing room of limited dimensions and rather low height. At Avening Lord Lee had had an opportunity to correct the defects he may have felt to exist in the original gallery.

Mr. Holden suggested that the gallery succeeded in all that Lord Lee sought to do, and was an experiment well worth making; he did not suppose that it was the last word, because the last word was never said, but it had the merit of simplicity, was direct and straightforward in design and in construction, and it showed the pictures to advantage, without glare and without unpleasant reflections in the glass—the principal function of a picture gallery.

The setting was pleasant and preserved the right scale for the pictures. There was no architectural detail to distract the attention, and yet there was no feeling that the architectural aspect of the room had been neglected. The proportions were good, and the quality of the work and the wall coverings worthy of the contents.

As a small point of criticism, Mr. Holden mentioned that he was conscious of a slightly heavy effect on the ceiling, due to its being in full shade and apparently without visible means of support, but added that the lantern slides showed the room in a much less favourable light than the room actually showed

itself. The spectator had to be in the shade if reflections were to be avoided. That was a principle about which there could be no compromise, and Lord Lee had been quite right to insist upon it, but, Mr. Holden suggested, one or two veins might have been introduced into the coping to allow a small trickle of light to be reflected on the ceiling, in order to introduce that touch of lightness enough to make one less conscious of the ceiling in suspension.

Lord Lee, said Mr. Holden, had done a most useful piece of research work in gallery design and construction, and we had every reason to thank him for it, and for his lecture.

Sir JAMES WEST [F.], Chief Architect, H.M. Office of Works, said that the subject was so controversial that he hardly dared start! He had had the advantage for years of knowing how Lord Lee thought about these problems. Lord Lee had made us all think, but we thought, he said, rather differently from him.

At White Lodge, he felt that Lord Lee had succeeded in achieving his object. The gallery was a delightful room, though he was told by those who had seen the two rooms that the new one was better. He (Sir James West) found that when we tried to apply the principles which he had observed in Lord Lee's galleries to the larger galleries, they just would not work. The reason was that if a lay light four feet in width was required to light a picture wall which was, say, ten or twelve feet high, to obtain the same intensity of lighting on the picture it was necessary to increase the width of that lay light to something like sixteen feet if the height of the gallery was increased two or threefold, as would be necessary in the case of a gallery thirty or forty feet in width. The galleries at the National Gallery approached forty feet. Sir James said that he did not suggest that that was an ideal width, but the problem of how a gallery of that width could best be lighted had been before a number of people, and, as had already been suggested in the discussion, it was very much a question of scale.

With reference to some of Sir Kenneth Clark's points, Sir James said that he, too, felt that there should not be anything disturbing between the observer and the picture. That was a most important point, and for that reason he questioned whether the proper source of light was between the observer in the shade and the picture on the wall on the other side of the light, which was above the observer. That was the principle which Lord Lee had adopted, and it seemed to work in the small gallery, but in a large gallery it did not seem to work so well.

A gallery of Lord Lee's type had been erected in recent years in Edinburgh. One of its features was mentioned by Mr. Holden; to get continuity across the width of the gallery the lower part of the roof had been carried out flush, so that there was not the feeling of a cavity, and the space between the edge of the velarium and the wall had been filled with louvres. The advantage of those louvres had been found to be just this, that it was possible to introduce on the side which was towards the spectator just that degree of lighting which the eye needed to carry it across from the solid centre to the wall. Furthermore, the louvres had a positive advantage in that they directed the light on to the wall. Lord Lee had a suggestion of a louvre at the side of his cavity. In this case there was a number of sides of cavities all directing the light on to the wall, and, because the observer could always see one side, it seemed to give that continuity to which the chairman had referred.

Lord LEE (in reply) : I have been set a very difficult task in replying, particularly to the technical points which have been raised by Mr. Bird. I do not believe, however, that things are quite so bad as they seem to him. At the same time I quite agree that if I could have had the advantage of consulting, and being advised by, all the eminent authorities, all the scientific bodies, all the high members of your profession to which he referred, before I committed myself to my little venture, I might have produced something very much better ; but quite certainly I could not have afforded it !

Here I feel that I must explain that I am not a propagandist. I have no desire to try to multiply the Avening gallery all over the country ; still less to contend that other galleries, public or private, are wrongly constructed, and that if only people would scrap them and begin again on my lines everything would be much better. I am, I hope, too modest for that ! I will only repeat that having found myself in the embarrassing position of living in a small country rectory, and having, like a tin can tied to a dog's tail, a rather large collection of pictures and other works of art, I wanted to provide housing for them of a kind which would enable me and my friends to enjoy them as we, rightly or wrongly, like to see them. And, in spite of what Sir James West has said, I still think that I can see my pictures better than I can see other pictures in the larger public galleries.

Sir JAMES WEST : I am sure you can.

Lord LEE : That may, of course, be due to a defect of my own eyesight ! I am very grateful to Mr. Holden, not only for his generous commendation but for describing the whole thing as "a piece of research work" ; for that is all that it is intended to be—an experiment in which I have tried to combine my practical experiences over a number of years.

Mr. Bird said that some of these things had previously been worked out and reported upon by the Physical Research Laboratory and elsewhere. I can only plead in reply that, in a blundering way, I had started this thing long before the Laboratory report was written. I began it at White Lodge many years ago, and have simply carried further the ideas that I worked out then, but with a freer hand.

I am sorry that Mr. Bird should feel so anxious about the electrical installation, but I think that, if he saw it, a good many of the apprehensions that he now expresses would be dispelled. I hope that he will not think it frivolous on my part if I add that if I had really proceeded under the surveillance of all the eminent authorities which he named I should have had no fun at all. From my point of view, what made the thing specially worth doing was that if I made a mistake I made it myself ; and that if I did stub my toe or trip, it should be my own fault and not that of some eminent authority, whom I should have had to pay just the same !

Reference has been made to the Boymans gallery in Rotterdam. I am ashamed to say that, although I have been an assiduous student of galleries abroad, I have not yet seen the Boymans gallery and so cannot answer the questions asked with regard to it. I shall certainly visit it at the first opportunity.

Mr. Jenkins referred to ventilation, and I am afraid my explanation was not as clear as it should have been. The louver ventilators open to the outer air, and there is a very perceptible current of air coming through them into the room and circulating. They can be opened or closed by pulling a string. The channel in the floor has nothing to do with the ventilation ; it is simply the channel for the hot pipes and is not open to the air. It plays no part in the ventilation. He

then spoke of the difficulty of carrying out some of my principles of construction in the atmosphere of London, and I entirely concur. I do not suggest for a moment that all of them would be suitable for conditions in London. Certainly the hangings on the walls would not be. We know only too well from experience in the National Gallery that if we put up fabric of any kind, in a year's time it becomes greasy and quite unsightly. Mr. Jenkins was also afraid that under my system pictures of the futuristic schools might suffer in visibility. That, of course, would be one of the subsidiary objects at which I should strive ; I should like them to be in the dark altogether !

Sir James West, for whose wide experience I have great respect, said frankly that he and I think differently about these matters, and that is quite true, we do, but I must point out to him that there is an even greater difference between the financial resources which he is able to control and the extremely limited and exiguous funds which I had at my disposal for building a gallery at all. If I could afford as much as he can for building a picture gallery, no doubt I should produce something very much better ; but that, unfortunately, is not the case.

Some of the highly technical points which Mr. Bird raised are, I am afraid, rather beyond me, but I feel sure that Mr. Holborow, my builder, who is here, may be able to clear up some of them, if Mr. Bird will be good enough to speak to him afterwards. At least I hope so ! For the rest, I think that it is exceedingly difficult to form a fair judgment from small scale drawings, and still less from lantern slides. It is quite true, as Mr. Holden pointed out, that the effect as shown on the slides is nothing like so good, in lighting and general amenity, as in the gallery itself. I can only end as I began, by saying that if any present are interested enough to want to pursue this matter further, then, to quote that well-known lady Miss Mae West, I hope that they will "come up and see me some time !" It would give me great pleasure to welcome them at Avening.

In conclusion, I should like to express my grateful acknowledgments to my friends and distinguished architects present who have been good enough to visit and to express favourable opinions of the gallery. I should specially like to thank Sir Kenneth Clark, Mr. O. P. Milne, Sir Robert Witt, and other speakers for the way in which they, from their personal knowledge, have spoken with authority about it.

Sir KENNETH CLARK, in closing the meeting, thanked Lord Lee once more and thanked those who had taken part in the discussion.

He also referred to one point that Mr. Jenkins had made with reference to the angle of the lighting. That, he said, was a point of controversy between Lord Lee and himself during all the time that the gallery was building. He had maintained, diffidently but obstinately, that the angle was too steep, but now he felt that for the type of picture exhibited there his objection was not justified. He had been quite converted to the angle from which the light came into the gallery. It came predominantly from the middle, and the curtains drew from the outside inwards, so that when they were drawn a little on a bright day the light was pushed into a less steep angle. Ideally, however, for pictures of another school he agreed strongly with Mr. Jenkins that they should be lit by a less steep angle.

Before the meeting broke up Mr. W. H. Ansell expressed the thanks of those present to Sir Kenneth Clark for taking the chair.

THE ALL-EUROPE HOUSE

DESIGNED BY ELIZABETH DENBY

GARDEN LAYOUT AND PLANTING BY
CHRISTOPHER TUNNARD



A SCHEME FOR MIXED DEVELOPMENT
WITH FLATS IN CENTRAL AREAS, AT A
DENSITY OF TWENTY HOUSES TO THE
ACRE

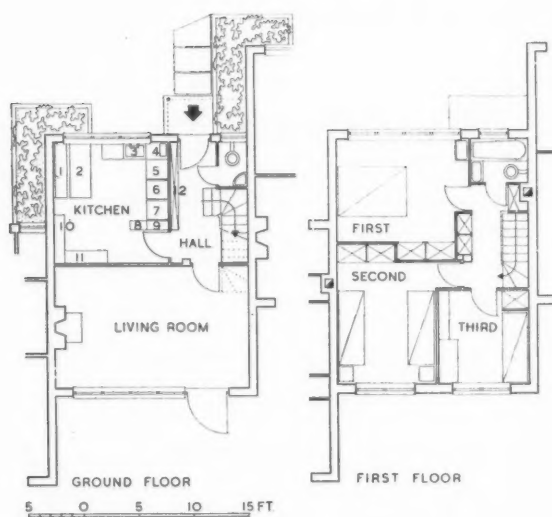
Two years ago the R.I.B.A. Public Relations Committee carried out a survey into speculative housing in Britain. Architects who read the articles on "The Architect and Housing by the Speculative Builder" published in the JOURNAL under the auspices of the Committee must have been impressed by the sterility of modern English housebuilding. The lack of any real knowledge of the needs of the people who live in the houses, and in the majority of cases the lack of success with which the problem of a pleasant layout and sense of a living community is tackled, demand the attention of everybody who has any concern for what is, after all, the major part of contemporary housing. The average type of speculative development—and this should not be confused with "jerry-building," for they are by no means synonymous—may provide good value in the sense of money for structure, but cannot be said to provide good value in the sense of money for the satisfaction of simple living needs, whatever arguments may be put forward about giving the public what it wants.

A couple of decades ago architects, town-planners

and sociologists came to England from all over the world to study our small housing and our garden cities movement. Positive and good work was being done here in the creation of new standards for housing of this category; new and humane environments were being created, that had some real relation to man's needs for convenience, privacy, seamliness, and sense of community. It is a tragedy that much of this work and its ideas should now have become partially sterile, that it did not develop and exert its influence on the vast amount of building that has subsequently been carried out by the architect and the speculative builder, on subsidised and unsubsidised housing. It is a reflection on our ability to develop that in 1939 we look outside England for a rejuvenation of ideas, that we have to admit that the Continent can now contribute more to the solution of our housing problems than is comfortable for our self-esteem, and that the All-Europe House which was exhibited this year at the Ideal Home Exhibition should, in the words of the exhibition catalogue, combine "ideas for easy, pleasant, economical living from many different countries . . . put together in such a way that



The Kitchen. Washer, cooker and refrigerator are all at working height. Equipment hangs from the wall above them. The drying cupboard is on the right. The coke store, accessible from the hall, is under the sink's right-hand draining board



Key to the Kitchen and Hall.

- | | |
|------------------|---|
| 1. Built-in seat | 7. Refrigerator |
| 2. Table | 8. Drying cabinet |
| 3. Garbly sink | 9. Brooms |
| 4. Water heater | 10. China |
| 5. Washer | 11. Dry goods |
| 6. Cooker | 12. Hats, coats, meters, and access to coke store |

an Englishwoman would not find them strange . . . and would have the least possible running cost in time and labour and money." Actually, however, the house designed by Miss Elizabeth Denby was not such a curious and eclectic collection of notions as this quotation suggests; the words "All-Europe" may have been given emphasis only to inveigle with a little glamour and mystery a weary and flat-footed exhibition public.

This house, and the type of development for which it is designed, can be considered as a direct outcome of the views that Miss Denby expressed at the R.I.B.A. nearly three years ago in her paper "Rehousing from the Slum-Dweller's Point of View."* Here she pointed out that "for some quite extraordinary reason we seem to have forgotten the beauty of a closely planned urban development in England. . . . I think we have gone to two extremes; we have apparently nothing between 12 houses to the acre, which cannot be architecturally treated, and which is impossible in the central area of towns, and blocks of flats which have nothing to offer the people who inhabit them for their leisure hours. What I do urge is that, with a population which will soon have reached its maximum, and which will soon be beginning to decrease, towns which, if you average them out, have a very low density per acre should consider the needs of the workman and his wife, and his young children and his adolescent children. I urge that we should re-plan estates nearer the centre of the town in ways which are more suited to the individual requirements of the working people, in ways which will cater for the privacy and quiet which they desire and the space which they need for rearing healthy and happy families, and which will give them the gardens which are so essential for growing the produce which helps them to eke out a precarious existence, and allows some little margin of fresh fruit, fresh eggs, poultry, and so on for the table of the working man."

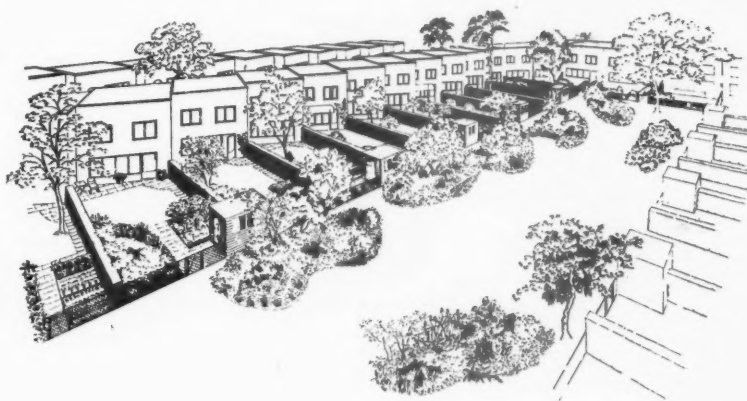
Planned for mixed development with flats in central areas at a density of 20 to the acre, the "All-Europe House" is worthy of careful consideration. Prevalent once in England, the coherent and satisfactory Regency terrace cottage is here given, literally, a new angle, thanks perhaps to Sven Markelius. The house is the usual subsidy size, 860 sq. ft., with a living room, eating-kitchen, downstairs lavatory, three bedrooms, bathroom, and a small garden. There is no front garden, the entrance being shielded from the pavement by the angle between adjacent houses, and the triangle thus formed being simply defined and enclosed by the use of flower-boxes. The result is an eminently economical use of space, and a pleasantly urban and humane street. The living-room, occupying the entire width of the house at the back, has a glazed door to the garden and the triangular terrace where sitting out of doors can be a comfortable and private affair, not overlooked from neighbouring houses. The

* R.I.B.A. JOURNAL, 21 November 1936. P.61.

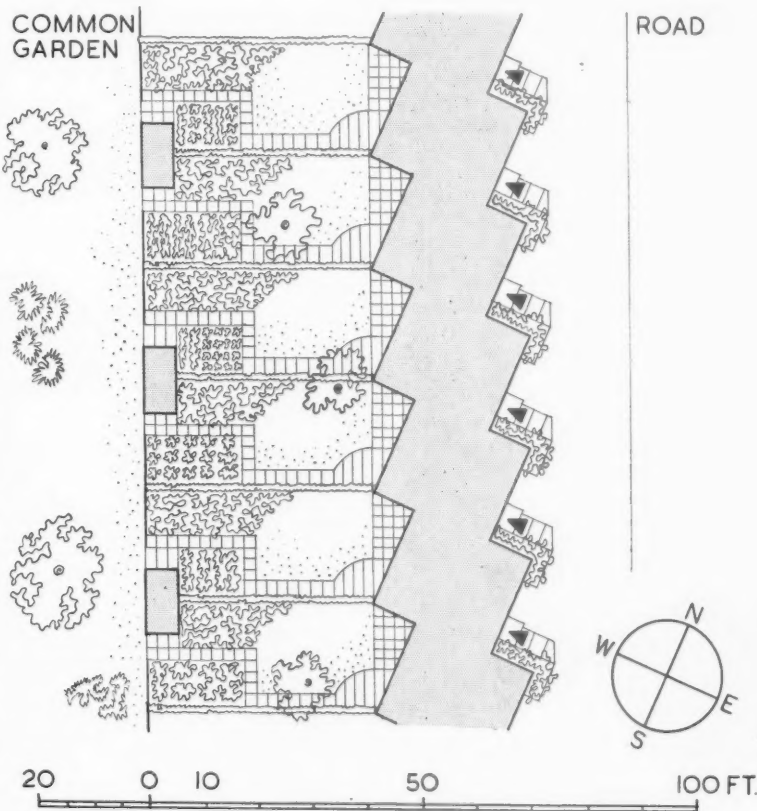
kitchen, main bedroom, and bathroom are planned to face east, and the two smaller bedrooms and the living-room west, the latter receiving the sunlight when the family is free to play or the children do homework in their bed-sitting rooms. With this orientation, the blank wall of the adjoining house on the garden side faces south, and is therefore perfect for fruit or rose-growing, and also creates in the living room the valuable sensation of warmth and cheerfulness that can be given by an external sunlit wall. But it should be pointed out that for estates developed as Miss Denby suggests, with gardens backing on to one another, or divided by a strip of common garden accessible from the end of each private garden, only half of the terraces can be correctly orientated in this way.

The living-room is 12 ft. by 18 ft., with a coke fire lighted by gas—the only open fire in the house. The sill to the large wooden framed window is low, and wide enough to hold pots of flowers. The doors from the hall and into the garden are well placed, leaving the larger part of the room free of interference from circulation.

The kitchen is planned for cooking and eating; a table and built-in seat occupy one corner, and the working section can be separated from this by a curtain. The sink is under the window, with a left-hand draining board hinged to fold over the sink when not in use, and a right-hand board forming the top of the coke store, which is accessible from the hall. Next to these are the wash-copper, cooker and refrigerator; the copper and refrigerator have vitreous-enamel tops for food preparation. A broom cupboard and clothes-drying cupboard form the end wall of the working recess. Smells and hot air are extracted by a flue running from the drying cupboard to the window. Cupboards in the other corner store dry goods, vegetables, bread, china, glass and cutlery, and since most perishable food is bought fresh in small



The above drawing by H. F. Clark shows the private gardens for horticultural use opening on to the common garden



quantities daily, the refrigerator is considered enough to hold the few—milk, meat and butter—which are kept overnight in any workman's household.

Refuse disposal is on the Garchy system from the kitchen sink; it is suggested that the central incinerating plant might supply constant hot water in the summer to the whole area of which houses such as this form a part, and that in winter it might supply instead central heating. In winter the instantaneous water-heater would provide for domestic use, and in summer electric fires would supply any extra heat required in any of the rooms. It is calculated that the cost of fuel for all purposes, even in winter, would be under 6s. a week for each house.

Upstairs, the main bedroom is divided from the second bedroom by built-in cupboards, and from the passage by a linen cupboard. The main bedroom is provided with a lavatory basin, and the third bedroom is planned to receive a 6 ft. 6 in. bedspring screwed into position between the cupboard and the wall. A small box cupboard is also accommodated in the passage.

With a development of 20 to the acre, there is space for private gardens 40 ft. long, where there is enough room for the family to grow flowers, a few vegetables, and sit out of doors in comfort. At the end of each garden a gate opens on to a central common garden. This common garden would provide the play and rest area, reserving the private garden for intensive horticultural use and for secluded sitting out. The consultant on planting and garden layout was Christopher Tunnard, A.I.L.A., who designed and supervised the construction of the garden at the exhibition.

FURNISHING

The furnishing and decoration of the exhibition house was in the hands of the Council for Art and Industry, who appointed the following: Mrs. Darcy Braddell, kitchen-dining-room; Miss Elizabeth Denby, living-room and hall; Mrs. Tormley, first bedroom and bathroom; Miss Christine Veasey, second and third bedrooms. Costs of furniture were, of course, reduced by the fact that all rooms except the living-room were half furnished with built-in equipment.

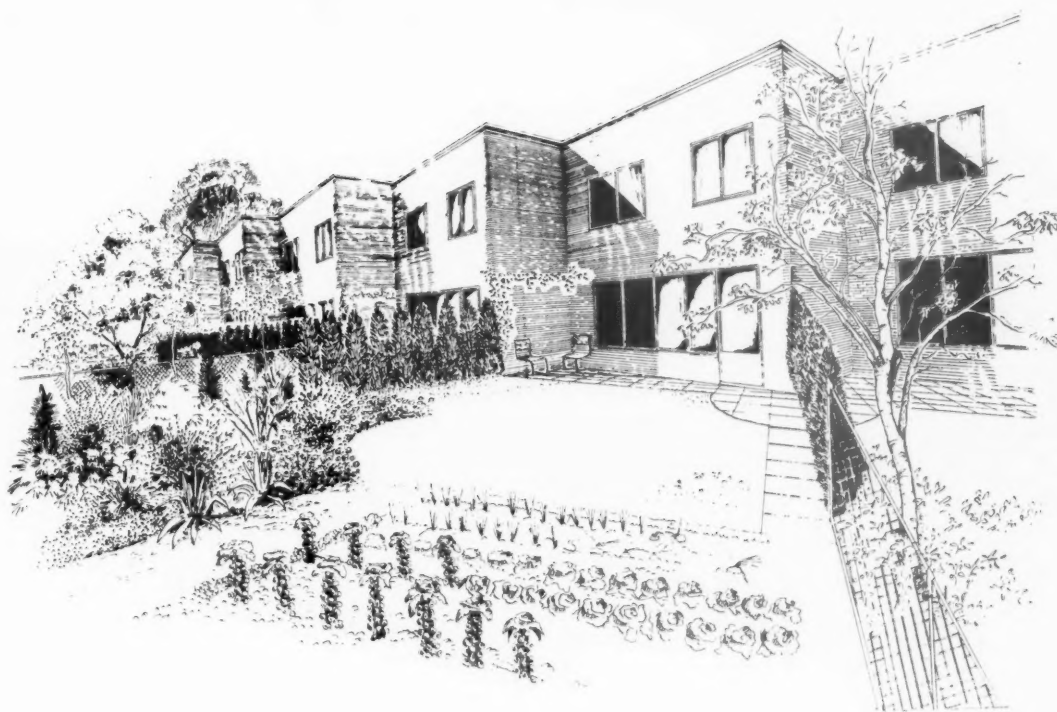
Living Room: A settee and two easy chairs, a fireside chair, a desk, bookshelves, a sideboard, a table, and two hard chairs. Cherry or elm was chosen for the wooden furniture, on account of its hard-wearing qualities and pleasant appearance. Walls were painted light oyster colour for ease of cleaning and economy in maintenance; the floor was stained ash grey, which will not show footmarks. Excellent pictures were obtained from children in London elementary schools, and excited the comment that "No workman would have Paul Nash or modern French paintings hanging in his living-room." The total cost of furnishing the room was £24 11s. 6d., which was made up as follows:



Approximate retail price			
£	s.	d.	
3 ft. 6 ins. diameter circular table, in cherry or elm ..	3	5	Rowley Gallery, 140 Kensington Church Street, London, W.8.
18 ins. diameter circular coffee table, in cherry or elm	14	0	
3 ft. 6 ins. sideboard, in cherry or elm	4	10	
Combined wall-desk and paper-rack	2	10	
Stick-back chairs, stained to match, at 10/6 each ..	1	1	
Upholstered two-seater settee and two chairs, in serviceable tapestry	6	6	John Lewis & Co., Ltd., Oxford Street, W.1.
Upholstered fireside chair with rubber suspension springing and loose sprung cushion	2	2	
Axminster carpet, woolback, 6 ft. 6 ins. by 4 ft. 6 ins. ..	2	12	
Curtaining, washable and fadeless, at 1/6 yard ..	1	1	House Furnish- ing, Ltd., 60 Eversholt St., N.W.1.
Bookshelves, home-made and painted, cost of materials ..	10	0	
Total cost of furnishing, £24 11s. 6d.			

Hall, Landing and Stairs: It was presumed that the owner would pad beneath the carpet with newspaper for sound deadening and to preserve the life of the carpet. The cost of carpeting was £3 16s. 4d., made up as follows:

£ s. d.		
Haircord carpet runners in hall and landing, 27 ins. wide. 10 yards at 4/6 yard	2	5
Haircord 22½ ins. wide on stairs. 8 yards at 3/11 ..	1	11
£3 16 4		



Garden layout by Christopher Tunnard. Drawing by H. F. Clark



Left: The girls' bedroom. At the bed-head on the left is a six-drawer desk, with a top opening to form a fitted dressing table similar to the fitting on the right (which can be used as a writing desk). Right: The boy's bedroom. All bedrooms have electric radiators built-in under the windows

Kitchen-Dining Room : Total cost, £19 11s. 3d., made up as follows :

	Approximate retail price £ s. d.		
1 refectory-type table .. 5 ft. long × 2 ft. 3 ins. wide, which can be pushed against the wall (over the long 5 ft. Bench) when not used for meals	2	5	0
1 Bench 5 ft. long ..	1	7	0
1 Stickback armchair ..	1	1	0
1 Stickback chair ..	10	6	
Linoleum, 3rd quality inlaid marble at 3/8 per sq. yard	2	5	0
1 long, full portiere curtain in dark blue 50 in. fadeless repp at 1/11, trimmed fadeless, washable Batik print and red repp bands. (This portiere curtain is to hide the working area of the room at meal times) ..			
1 pr. window curtains in fade- less Batik print at 1/- a yd., 31 ins. wide, bound with red fadeless repp ..	2	2	9
5 ft. long squab cushion for Bench in calico case stuffed fibre, covered in Rexine at 2/4 a yd., 50 ins. wide, piped red repp ..			
Including linings, piping cord and material, stuff- ing, tapes, etc., but no labour ..			
Kitchen equipment (includ- ing cloths and brooms), 2 brooms, short brush and pan, mop, 4 saucepans, steamer, 2 kettles, 1 or 2 frypans, mincer, mixing bowl, 3 pudding bowls, 3 pie dishes, pastry and cake tins, 2 strainers, wire sieve, whisk, grater, flour bin, bread bin, collander, pas- try board, rolling pin, lemon squeezer, washing- up bowl, potato peeler, sink basket, 6 dusters, 6 tea-towels, kitchen scales, washing-up mop, scourer, dishcloth, floorcloth, pail, wire cake tray, tin opener, set of wooden spoons, scrubbing brush, 3 trays, kneeling mat, bread board and small sundries ..	6	0	0
Cutlery and canteen ..	1	10	0
	Army & Navy Stores, 105 Victoria St., London, S.W.1.		
	Any furnishing store.		
	Curtains : House Furnish- ing, Ltd., 60 Eversholt St., London, N.W.1.		
	Any Store		

China and glass 2 10 0
(including dinner set
(Tams ware) for 6 people,
£1/6/-; Tea set (Tams
ware) for 6 people, 6/9)

Messrs. A. W.
Gamage, Ltd.,
Holborn,
London,
E.C.1.

First Bedroom : Allowance was made for good quality in the most important things, and those least easily replaced—the furniture and bed. The total cost was £26 11s. 7½d., made up as follows :

	Approximate retail price £ s. d.		
1 Dressing table, cheval mirror, long drawers, natural oak ..	6	0	0
1 Chest of drawers to match	4	4	0
2 Pedestal cupboards to match at £1/5/9 ..	2	11	6
1 4 ft. divan, open spring with mesh top, spring in- terior overlay with flock, and fibre top stuffing, and waxed oak head-board ..	4	15	0
1 chair, stick-back type ..	10	6	
1 Box-stool, painted ..	10	6	
Linoleum at 1/11½ sq. yard, 14 yards ..	1	7	5
2 rugs at 11/9 ..	1	3	6
2 Lighting fittings at 2/3 ..	4	6	
Flex ..	1	3	
Bedding : mattress pad, underblanket, pair woollen blankets, single woollen blanket, 1½ pairs white sheets, 2 pillows, 1 bolster, 4 pillow slips ..	3	14	2½
1 Bedspread, seersucker at 3/6 yd., 90 ins. wide ..	10	6	
Curtains and vallance, 10½ yds. 48 in. casement cloth at 1/0½ yd. ..	10	10½	
Binding for cutains, vallance, etc. ..	5	10½	
1 small mirror ..	6		
1 glass shelf ..	1	6	
	Messrs. John Lewis, Ltd., Oxford Street, London, W.1.		
	Messrs. John Lewis, Ltd.		
	Messrs. Catesby's, Ltd., 64 Tottenham Court Road, London, W.1.		
	Messrs. John Lewis, Ltd.		
	Messrs. F. W. Woolworth & Co., Ltd.		
	Jones Bros., Holloway Road, London, N.7.		
	Messrs. John Lewis, Ltd.		
	Messrs. John Lewis, Ltd.		
	Messrs. John Lewis, Ltd.		
	Messrs. F. W. Woolworth & Co., Ltd.		

Bathroom : Mural Rexine at 1s. 11d. sq. yard was used for the walls ; furnishing and flooring cost £1 11s. 2d., made up as follows :

	Approximate retail price £ s. d.	
Linoleum at 1/11½ sq. yd. . .	2 11	North London Drapery Stores, 71 Seven Sisters Road, N.7.
Towels	1 1 2½	Jones Bros., Holloway Road, N.7.
Sundries	7 0	Messrs. F. W. Woolworth & Co., Ltd.

Second Bedroom : Furnished for two sisters, aged 14 and 10, there was a six-drawer desk, with top opening to display fitted dressing table, and a mirror inside the lid. The second sister was provided with a dressing-table fitted in the same way, but closed ; this provided a writing desk, which the sisters could share. The cost of furnishing was £20, made up as follows :

	Approximate retail price £ s. d.	
Girls' 6-drawer dressing chest	4 10 0	Messrs. Easiwork, Ltd., 242 Tottenham Court Road, W.1.
Dressing table and writing desk	1 15 0	
2 Divans at 55/- each . .	5 10 0	
1 Chair	7 11	
Linen basket	5 11	
2 Bookshelves with ends at 7/6	15 0	Messrs. Catesby's, Ltd. 64 Tottenham Court Road, London, W.1.
12 yards of rose linoleum at 1/11½ yd.	1 3 6	Messrs. John Lewis, Ltd., Oxford Street, London, W.1.
14 yards of curtain fabric at 1/4½ yd.	19 3	
Sirdar rug wool and canvas for rug	—	Local shops.
2 Pillows at 3/6 each . .	7 0	
4 Blankets at 17/11 a pair . .	1 15 10	
1 Pair of under blankets at 5/11	5 11	
3 Pairs cotton sheets at 6/11 . .	1 0 9	

Third Bedroom : Furnished for a boy of 16. A spiral spring and mattress was fitted in the recess, with a fitment with two drawers and central spaces for books and slippers beneath. A table desk with three drawers flush with a set of four drawers provided a good table height working space, 1 ft. 11 in. deep by 5 ft. long. The cost of furnishing was £15, made up as follows :

B*

Approximate retail price

	£ s. d.	
Table desk fitted 3 drawers . .	3 17 6	Messrs. Easiwork, Ltd., 242 Tottenham Court Road, London, W.1.
Pedestal with 4 drawers . .	2 17 6	
Spiral spring, brackets, fit- tings and fibre and hair overlay	1 19 6	
Fitment under bed	2 2 0	
Chair	12 6	
Materials to make Sirdar wool rug	—	Local shops
7 Yards material for curtains and bed cover	10 6	
1 Pair blankets at 17/11 . .	17 11	
1 Under blanket	2 11	
2 Pillows at 2/- each	4 0	
2 Sheets at 6/11 a pair . . .	13 10	
2 Pillow slips at 1/6 each . .	3 0	
Miscellaneous	—	

The house at the exhibition was built by Davis Estates, Ltd. The cost, based on 12 houses, was estimated at £500 per house, including built-in equipment, garden terracing, etc. The following firms loaned materials and equipment for the house and garden :

THE HOUSE

The London Brick Company, Ltd., Africa House, Kingsway, W.C.2, sandfaced Flettons and Fletton bricks ; Neolite, Ltd., Neolite Works, Borough Green, Kent, Neolite hand-made paving tiles on terrace and front entrances ; Thermacoust Products, Ltd., 32 Victoria Street, S.W.1, Thermacoust ceiling lathing and slabs for partitions ; W. A. Telling, Ltd., 49 Acre Lane, Brixton, S.W.2, plastering throughout the house ; A. Sanderson & Sons, Ltd., 52 Berners Street, W.1, wallpaper and inside decorations ; Broad & Co., Ltd., 4 South Wharf, W.2, quarry tile window sills, bath and w.c.s and lavatory basins, marble slabbed surround to coke fire in living room ; Eagle Range & Grate Co., Ltd., 58 St. Paul's Churchyard, E.C.4, gas coke grate in living room ; Easiwork, Ltd., 242 Tottenham Court Road, W.1, built-in cupboards in hall and kitchen, wardrobe cupboards dividing parents' and girls' bedrooms, and wardrobe in boy's room ; Ingram Perkins, Ltd., 12 Praed Street, Paddington, W.2, flush doors throughout the house and front doors ; G. & S. Allgood, Ltd., 12-13 Eagle Street, Holborn, W.C.1, general ironmongery throughout the house ; Dap Manufacturing Co., Ltd., Florence Terrace, The Mall, Ealing, W.5, silent curtain runners of synthetic resin buried in plaster, and those in the living room and kitchen recess ; Gas Light & Coke Co., Horseferry Road, S.W.1, gas equipment in kitchen, consisting of wash boiler, cooker and refrigerator, and the gas drying cupboard ; Ascot Gas Water Heaters, Ltd., 244 High Holborn, W.C.1, Ascot multi-point heater ; Vent-Axia, Ltd., 9 Victoria Street, S.W.1, Ventaxia stale air extractor over kitchen recess ; Waring & Gillow (1932), Ltd., 164-182 Oxford Street, W.1, electric lighting fittings in kitchen, hall, landing, lavatory and bathroom, and electric fires in bedrooms and kitchen.

THE GARDEN

Marriott & Son, 58 High Street, Highgate, N.6, turf ; Sam Nicholl, Islip Street, Kentish Town, granite sets ; Penfold Fencing, Ltd., Imperial Works, Balmoral Road, Watford, Herts, fencing ; "Neolite," Ltd., Borough Green, Kent, paving ; Stuart Low & Co., Bush Hill Park, Middlesex, shrubs and trees.

STRUCTURAL AIR RAID PRECAUTIONS

REPORT* ON THE CONFERENCES ORGANISED BY THE ROYAL INSTITUTE OF BRITISH ARCHITECTS
AT THE REQUEST OF THE HOME OFFICE

In April 1938 the R.I.B.A. were asked by the Home Office to interest and instruct the architectural profession in the technique of Structural A.R.P. The Council of the R.I.B.A. undertook to do so, and, following discussion with the Chief Technical Officer of the A.R.P. Department of the Home Office, a series of conferences was arranged. The Home Office made available to the R.I.B.A. various confidential documents. It was agreed that the two signatories of this report should act as lecturers at the conferences as they had been representing the R.I.B.A. on the Structural Precautions Committee of the Home Office for three years, and had therefore had opportunity of studying the subject.

THE LONDON CONFERENCE

The first conference, held at the R.I.B.A. from 13 to 15 June 1938, and opened by the Secretary of State for Home Affairs, was attended by approximately 300 architects, including one representative each of the principal provincial Allied and Associated Societies of the R.I.B.A. A full report of the proceedings was printed and published in the R.I.B.A. JOURNAL and reprinted as a pamphlet. A report of this conference was sent to the Secretary of the A.R.P. Department on 22 June 1938.

PROVINCIAL REPRESENTATIVES

It was agreed that the representatives of the Allied Societies should act as information officers in the areas of their societies, receiving from time to time such further technical information that the A.R.P. Department should wish to send them, and advising as required without fee architects practising in their areas. A list of these persons was attached as Appendix A.

PROVINCIAL CONFERENCES

Fourteen provincial conferences were held. A list is attached as Appendix B. These took the form of a public evening meeting, together with a whole-day instructional course open to all Registered Architects and A.R.P. officers. All local authorities in the areas concerned were invited to send technical representatives. In the majority of cases similar invitations were issued to important public and commercial institutions (e.g., hospitals, harbour authorities, large manufacturing concerns, etc.) and also to local practising engineers and surveyors and to local representatives of the building industry.

The conferences were all well attended. In several cases the Allied Societies reported the best attendance of their members at any function that had ever been obtained. At Belfast the attendance at the inaugural meeting was over 1,000 persons. In Manchester over 400 persons attended the instructional course. At Nottingham the attendance was over 200, many persons travelling from Derby, Lincoln and other distant parts of the area of the Allied Society.

At all conferences great interest and keenness were displayed, and the thanks of the gatherings transmitted to the R.I.B.A. It can be said that a large proportion of the architec-

tural profession in Great Britain and Northern Ireland is now conversant with the principal elements and aims of Structural A.R.P.

(Signed) THOS. E. SCOTT
ERIC L. BIRD

16 April 1939

Appendix A

A list of delegates who attended the conference at the R.I.B.A. was attached to the copy sent to the Home Office.

Appendix B

PROVINCIAL CONFERENCES ON STRUCTURAL A.R.P.

Revised particulars of fourteen conferences arranged by the Allied Societies of the Royal Institute of British Architects.

No.	City or Town	Allied Society	Date
1.	Leeds.	West Yorkshire Society of Architects.	13-14 July.
2.	Birmingham.	Birmingham and Five Counties Architectural Association.	18-19 July.
3.	Hull.	York and East Yorkshire Architectural Society.	13-14 Sept.
4.	Liverpool.	Liverpool Architectural Society.	3-5 Oct.
5.	Norwich.	Norfolk and Norwich Association of Architects.	10 Oct.
6.	Manchester.	Manchester Society of Architects.	19-20 Oct.
7.	Newcastle.	Northern Architectural Association.	24-25 Oct.
8.	Reading.	Berks, Bucks and Oxon Architectural Association.	3 Nov.
9.	Southampton.	Hampshire and Isle of Wight Architectural Association.	14-15 Nov.
10.	Plymouth and Exeter.	Devon and Cornwall Architectural Society.	21-22 Nov.
11.	Belfast.	Royal Society of Ulster Architects.	28-29 Nov.
12.	Nottingham.	Nottingham, Derby and Lincoln Architectural Society.	1-2 Dec.
13.	Cardiff and Swansea.	South Wales Institute of Architects.	12-13 Jan.
14.	Glasgow.	Royal Incorporation of Architects in Scotland.	20-21 Feb.

(1) The Belfast Conference was extra to the series and arranged between the Home Office and the Government of Northern Ireland; the latter paid expenses.

(2) The Norwich and Reading Conferences were one day conferences and were each attended by one lecturer only.

* The Report has been forwarded to the Home Office.

R.I.B.A. TOURING EXHIBITIONS

SOME RECENT DEVELOPMENTS AND ACTIVITIES

POLICY AND ORGANISATION

Since its inception some four years ago the R.I.B.A. Exhibition Organisation has developed far beyond the expectations of its originators. In 1938 exhibitions were shown at 36 centres and visited by 317,511 persons. The general policy has now become well established. Two exhibitions, one large and one small, are shown at the R.I.B.A. in the spring and autumn respectively every year. Each then proceeds on tour, the duration of a tour depending entirely on the demand for the exhibition concerned. In most cases tours last about two years, by the end of which time the exhibits have become somewhat worn and the "story" rather out-of-date.

Organisation has also become established. The full Exhibition Sub-Committee meets twice a year to consider general policy, details of which are in the hands of an Organising Section. For the preparation of each exhibition a special Executive Section is appointed which includes Section Organisers, each of whom is responsible for a part of the exhibition, often with one or two persons to help him. The Organising Section determines the main lines of the "story" of each exhibition, and the Executive Section and Section Organisers develop and illustrate it in detail.

The nucleus of each exhibition is obtained from the Permanent Collection of Photographs. To this nucleus are added diagrams—prepared by a Diagrams Section—and additional photographs, specially obtained. The Permanent Collection is kept up to date by a group of workers, who give their services voluntarily, as do all members working on the Exhibition Organisation. Indeed, the scheme is only workable because of the enthusiastic support of those members who give their time freely to it and because of the generosity of members who present photographic enlargements of their buildings to the Permanent Collection when invited to do so. During 1938 just over 100 members were engaged in various capacities as volunteer workers on the Exhibition Scheme in addition to those members of Allied Societies who gave their services when exhibitions were on show in their areas.

RECENT EXHIBITIONS

At the present time three exhibitions are on tour, and two have just ended very successful runs. "Airports

and Airways"—first shown in the spring of 1937—has received a total attendance of 140,046 persons at 19 centres. "Modern Schools," since the autumn of 1937, has been seen by 149,192 persons at 20 centres.

At present on tour are "Health, Sport and Fitness," "The Small House" and "Road Architecture." All are receiving good attendances and Press notices. For "Health, Sport and Fitness" excellent arrangements have been made for Scotland in collaboration with the National Fitness Council for Scotland and the Royal Incorporation of Architects in Scotland and its branches. The arrangements are as follows:

McLellan Galleries, Glasgow, 23 May to 3 June. Opened by the Lord Provost of Glasgow, supported by the President of the Glasgow Institute of Architects.

New Gallery, Edinburgh, 6 to 17 June. Opened by the Lord Provost of Edinburgh, supported by the President of the Royal Incorporation of Architects in Scotland.

Lesser Caird Hall, Dundee, 21 June to 1 July. Opened by the Lord Provost of Dundee, supported by the President of the Dundee Society of Architects.

Music Hall, Aberdeen, 5 to 15 July. To be opened by the Lord Provost of Aberdeen, supported by the President of the Aberdeen Society of Architects.

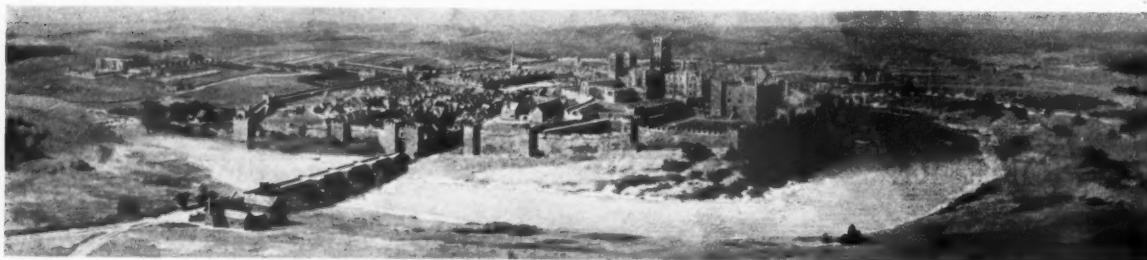
The National Fitness Council for Scotland are making full use of the Exhibition and supporting it wholeheartedly. In Glasgow alone they displayed 3,500 posters and distributed 50,000 leaflets. Eventually some 200,000 leaflets will be issued throughout Scotland.

On 1 August this exhibition will be sent to New Zealand under the auspices of the New Zealand Government as part of their campaign for national fitness. This will be the first R.I.B.A. exhibition to visit a Dominion.

THE WORLD'S FAIR, NEW YORK

A very important contribution to the exhibits in the British Pavilion at the New York World's Fair has been the diorama "Changing Britain." This is a part of the Public Welfare Exhibit and portrays the development of a typical English city from the seventeenth century to the present time. It consists of a large model, 15 ft. long, which, by means of an ingenious system of lighting, changes slowly before the spectators' eyes. Its "story" is the series of changes

(Continued on page 824)



1620



1860



1939

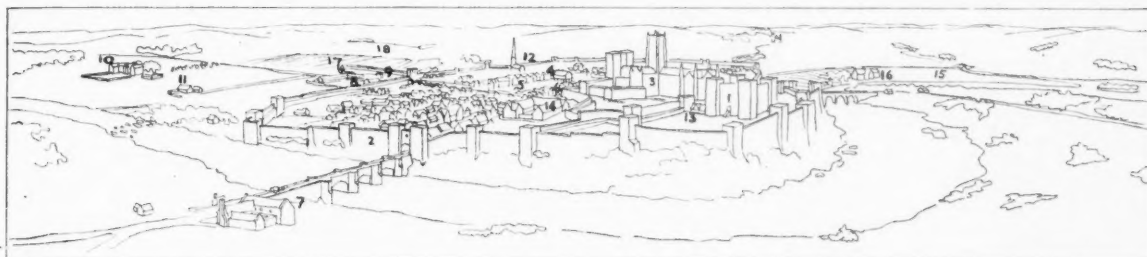
Photographs Crown copyright. Reproduced by permission of the Controller, H.M. Stationery Office

PUBLIC WELFARE EXHIBIT, THE BRITISH PAVILION, NEW YORK WORLD'S FAIR, 1939

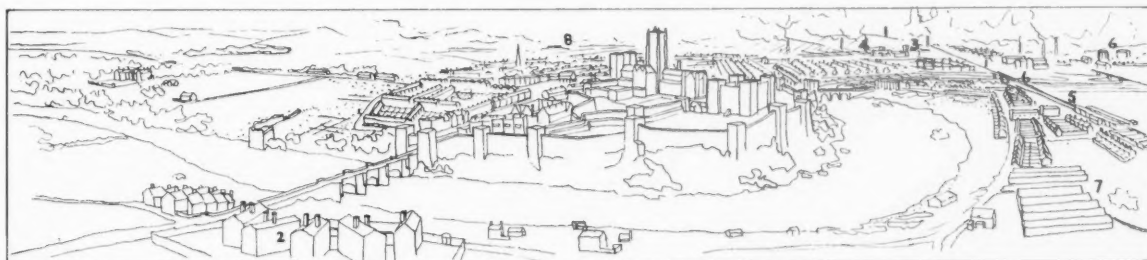
This exhibit forms the central feature in the Public Welfare Hall in the British Pavilion and is designed to show the social and architectural changes that have taken place in a typical English town during the last three hundred years.

Three models of the town have been made, each 15 ft. long, and are shown by the "Pepper's Ghost" method—a device based on the reflection of diorama-models on to a mirror mounted at an angle of 45 degrees in a frame like a proscenium opening, and lit in such a way that to the spectator each scene seems to fade gradually into the next.

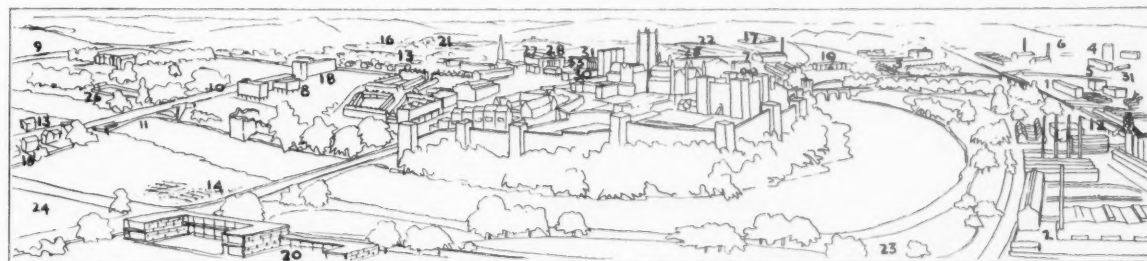
The first model shows the mediæval town as it was in 1620, the time of the Pilgrim Fathers. This scene fades into a view of the same town in the middle of the nineteenth century when the Industrial Revolution had created chaos, and this in its turn gives place to the town as it is to-day, when many social services have been introduced and an effort is being made to exert the influence of town-planning. This last model does not aim at showing an ideal town but at showing the extent of improvement that has already been made.

**1620**

1, Castle. 2, Fortified walls. 3, Abbey. 4, Town Hall. 5, Market Square. 6, Tavern. 7, Guest Houses. 8, Tilting Ground. 9, Archery Butts. 10, Manor House. 11, Manor Farm. 12, Church. 13, Grammar School. 14, Almshouses. 15, Abbey Lands. 16, Abbey Barn. 17, Common Lands. 18, Open Fields

**1860**

1, Coal Mines. 2, Workhouses. 3, Law Court. 4, Prison. 5, Railways. 6, Gas Works. 7, Factories. 8, Public School

**1939**

INDUSTRY.—1, New Factories. 2, New Steelworks. 3, Public Market. 4, Gas Works. 5, Electric Power Station: National Grid System. 6, Water Works. 7, Employment Exchange. 8, Industrial Research Station

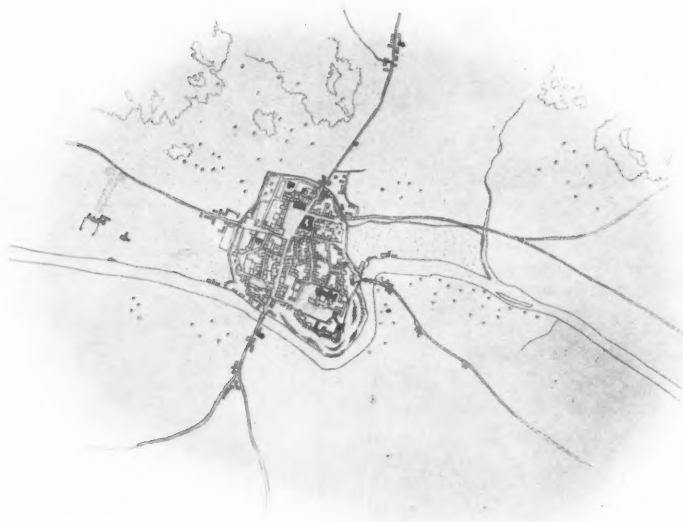
TRANSPORT AND SERVICES.—9, By-pass road avoiding town. 10, New Ring-road. 11, Bridges. 12, Railway Station. 31, Sewage and Refuse Disposal. 32, Fire Brigade Headquarters and A.R.P. Centre. 33, New Town Hall and Civic Square

HOUSING AND EDUCATION.—13, New Garden Suburb. 14, Demolition of Slums. 15, Community Centre. 16, Nursery Schools. 17, Elementary and Secondary Schools. 18, Technical College

HEALTH AND RECREATION.—19, Health Centre. 20, Municipal Hospital. 21, Isolation Hospital. 22, Cottage Hospital. 23, Public Park. 24, Playing Fields. 25, Allotment Gardens. 26, Swimming Pool. 27, Covered Swimming Bath. 28, Museum and Art Gallery. 29, Manor House preserved for Nation. 30, Library

The plans for this town were prepared and all architectural information supplied by Mr. Ralph Tubbs [A.] and Mr. H. T. Cadbury-Brown [A.] on behalf of the Institute.

The construction and modelling were carried out for the Ministry of Health and the Department of Overseas Trade by Mr. R. T. Roussel and Mr. Ernest Whatley.



1620

A typical mediæval town on a site originally chosen for its strategic position on the main north trade route. The social history of the past is told clearly by the architecture. The control has passed successively from the castle to the cathedral and now to the newly erected Town Hall in the market square, in which the citizen is beginning to assume control of his own welfare

in British social history and the development of self-government through the centuries. The illustrations here reproduced will indicate to the reader the more salient points presented.

The Exhibition Sub-Committee were asked to undertake this work by the Ministry of Health. After several meetings with officials of the Ministry, in which the President took a leading part, it was decided that the Committee should retain control of the exhibit, but that for the detail work, for which a great deal of research and study were necessary, two members, Mr. H. T. Cadbury Brown [A.] and Mr. R. S. Tubbs [A.] should act for the Ministry in the capacity of private architects. How well these two members have carried out their task will be appreciated from the illustrations. It is hoped that, at the conclusion of the World's Fair, it may be possible to exhibit the diorama at the R.I.B.A. together with a number of the architects' detail drawings and information collected by them.

In addition to the diorama, the Exhibition Sub-Committee supplied, at very short notice, a group of 100 photographs to the Department of Overseas Trade for exhibition in the British Pavilion. These photographs were of typical Contemporary British Architecture.

OTHER ACTIVITIES

At the request of the British Council, 80 photographs of British public buildings were sent to Stockholm for exhibition in the Liljevachskonsthall as part of an exhibition of Contemporary British Art.

A special exhibit of museums and art galleries has been organised at the request of the Museums Association, and will be shown at their Annual Conference at Cheltenham in July. Mr. Verner O. Rees [F.] is writing a short description in connection with this exhibit, copies of which will be circulated at the Conference.

The Exhibition Sub-Committee have acceded to a request of the Schools Section of the Royal Agricultural Show to arrange an exhibit of School Architecture at the Show, which is to be held at Windsor from 4 to 8 July. This exhibit is being drawn partly from the Modern Schools Exhibition, the provincial tour of which has just ended; to the nucleus so formed are being added recent photographs of rural schools, community centres and a few specialised schools. The selection is being made in collaboration with Mr. G. E. Kendall [F.], Chief Architect to the Board of Education. It is expected that Their Majesties the King and Queen will visit the exhibit.

1860

The mediæval town is almost submerged in the chaos of industrial development. Factories and housing, hopelessly intermingled, have spread down the valley and along the railway regardless of the planning of future development. Machinery has changed the nation from one composed mostly of country dwellers controlled by landowners into one of townspeople exploited by the industrial employer. In spite of the enormous increase of wealth, there are no social services of any kind, except a workhouse, a law court and a prison

**1939**

The town is in transition to something better. Since the middle of the nineteenth century, the true feeling of the people has begun to make itself felt. The Ministry of Health, through town-planning authorities, is disentangling the confusion left by the Industrial Revolution and zoning future development. A ring-road has been formed within the town, new parks and open spaces created, and a by-pass road built beyond the outskirts of the town. The individual is now provided with social services that care for his well-being in industry, housing, education and health



REFUGEES COMMITTEE: REPORT TO COUNCIL

Ia

The Committee was set up by the Council at their meeting on 9 January 1939.

TERMS OF REFERENCE:

To enquire into the whole problem of refugees with a view to supplying the Council with the information necessary to enable them to formulate a policy to be followed in this matter.

Ib

EXISTING PROCEDURE

The refugee problem started in 1933, when Herr Hitler first came into power; at that time there were comparatively few refugees, all of whom were easily enough absorbed into the British profession. Contacts were early established between the Home Office and the R.I.B.A., and the Home Office agreed to make acceptance of the R.I.B.A. Code of Practice a condition of entry and watched for any signs of undercutting and unprofessional conduct. Some, but by no means all, cases were referred to the R.I.B.A. for the Institute's opinion which, prior to the establishment of the Refugees Committee, was given by the Practice Standing Committee.

Broadly speaking, in the past there have been two stages in admission:

- (a) the admission on a *residential permit* which does not allow employment of any sort; and
- (b) *labour permit*, which allows practice.

Full details of the working of the system of admission in the past are not relevant to this report, but an exact description of the present procedure is given later on. The old system or lack of system by which the R.I.B.A. was only occasionally consulted, lacking full knowledge of all the relevant factors, was found inadequate after the Anschluss and even more so after the German pogroms. It became increasingly evident that without any definite policy, the R.I.B.A. would be in no position either to assist our persecuted colleagues or to protect our own members.

Ic

PROCEDURE FOLLOWED BY THE COMMITTEE

From the first meeting of the Committee, it was evident to us that we would be unable to formulate any policy likely to be satisfactory to Council or ourselves without a great deal more information on matters of fact than we possessed at the start. Accordingly, the

greater part of the Committee's time has been spent in collecting and analysing the facts which are presented as the basis of our recommendations in the next section of this report. The chairman and the secretary had a useful interview with Mr. E. N. Cooper, head of the Aliens Department of the Home Office.

During the time that it was sitting, the Committee were asked to deal with three Home Office requests for advice on the desirability of granting labour permits to three architects, none strictly to be described as refugees. We also decided to take emergency action (subject to the Executive Committee's consent, which was given) in the case of three Austrian or Sudeten German architects who were in immediate physical danger. The Executive Committee agreed to the President signing telegrams to the British authorities in Prague to request the use of their influence to protect these men until residence permits could be obtained to allow them to enter Britain. This was successfully achieved.

A letter from the acting chairman of the Architects' Board of Western Australia was received by the Committee, seeking the guidance of the R.I.B.A. on the refugee problem. The Committee decided that no advice could be given until the Council had decided on its policy.

IIa

OPINION

An essential part of our investigation was to discover the general opinion of the profession in Great Britain on the refugee problem. The conclusions that we have been able to reach are based on general impressions as well as on conclusive evidence, and we can point out that the Committee was on the whole representative of a diversity of interests, ages and points of view. All our members tried to the best of their ability to glean what information they could, unofficially outside the committee room.

The chief burden of the refugee problem has been borne by London architects who, more than provincial architects, have experienced whatever effects there may have been of professional competition from refugees. The London architects, too, have taken the heaviest share of the humanitarian work, though two refugee architects are being maintained now by provincial architects in Manchester and Liverpool. We were impressed by the amount that has been done on the humanitarian side by the younger members of the profession and by students.

To sum up, it can be said that there is no coherent expression of opinion ; nevertheless :

- (a) a certain apprehensiveness seems to exist due to a fear that the infiltration of refugees might result in loss of work to British architects. A leading article in the *Parthenon* was brought to our notice in which it was stated that the Incorporated Association of Architects and Surveyors were proposing to protest formally to the Home Office against the granting of labour permits to refugees.
- (b) When we were enabled to relate these apprehensions to the positive evidence of the Home Office figures of refugees at present possessing labour permits (see below), it seemed to us that these fears were based more on what the profession feared might happen in the future, should the numbers increase greatly, than on any actual damage to professional fortunes that had happened in the past.
- (c) Most of the refugees with labour permits are working in partnership or as principals, and insofar as architects' fortunes have been affected hitherto, the principals rather than the assistants have been concerned, particularly as each new office potentially is a source of assistant employment.

Nevertheless, since we were charged with the duty of considering a future policy which might involve the admission of refugees with permits to work as assistants, we felt it desirable to consult the opinion of the Association of Architects, Surveyors and Technical Assistants as the body most fitted to represent the assistant's point of view. The Council were asked to appoint a member to the Committee. But owing to R.I.B.A. procedure, the appointment could not be effected until the penultimate meeting of the Committee, but the A.A.S.T.A. representative has agreed to the Committee's recommendations, which have been confirmed by the A.A.S.T.A. Council. In general, from the evidence which we had before us, we feel justified in suggesting that the assistant section of the profession and the junior members generally are inclined to be sympathetic to the adoption of a generous policy.

IIb

THE ECONOMIC POSITION OF THE ARCHITECTURAL PROFESSION IN GREAT BRITAIN

As part of our preliminary studies of the present economic state of the profession, we had the benefit of an interview with an officer of the Building Industries National Council, from whom we gathered that, at the time when the enquiry was made, the outlook was not bright. The fall in general building activity for 1937-38 was 7 per cent. and a fall of as much as 14 per cent. was anticipated for 1938-39. The fall would probably be

felt most in South England, less in the Midlands and least in Scotland. In answer to a more recent enquiry from the same source, we learn that, due to the economic recovery in Scotland and new A.R.P. requirements, the figure for 1938-39 is now likely to be less than 14 per cent.

Study was made of various indices of unemployment, to find, if possible, evidence of tendencies which might guide the Committee. At present there is little unemployment among assistants ; the private practitioners, generally, however, are short of work. Our studies did not reveal any significant tendencies in architectural employment and only tended to emphasise, what is in fact generally known, that architectural employment is essentially casual. It is impossible to state that the country is normally able to absorb the services of some definite number of architects.

At times of prosperity the profession is overworked and at times of depression almost entirely without employment sufficient to earn a living for those lacking private means.

The position of the architectural profession can be contrasted most obviously with that of doctors and dentists. These two professions both maintain approximately full employment in times of prosperity or depression.

III

OTHER PROFESSIONS

The action taken by the dental and medical professions with regard to the refugee problem was considered by the Committee with a view to its bearing on our problem. It was soon evident to us that the contrasts, pointed out above, between the casualness of architectural employment and the comparative certainty of medical and dental employment, made impossible any direct application of the doctors' and dentists' policy to our profession.

We received the assistance of Mr. W. G. Senior, secretary of the British Dental Association, and of Dr. Hill, deputy medical secretary of the British Medical Association, both of whom have been intimately concerned with the formulation and application of the refugee policies of those two professions.

Prior to the Anschluss, 180 German doctors were admitted, with leave to practice after they had taken the requisite English qualifying examinations for admission to register. The German entry was then considered closed. After the Anschluss, 50 Austrians were admitted on similar terms, by a special Austrian Medical Aid Committee. It is proposed to establish a joint committee between the Home Office and the B.M.A. to deal with the whole problem.

In addition to those admitted for medical general practice, many more have been admitted for other than general practice, as pathologists, teachers, etc.

We were given to understand that the medical profession began by being exclusive, but latterly has been turning to a more humanitarian policy.

The Dentists.—Prior to the Anschluss, approximately 85 German dentists had obtained permits to work in Great Britain out of some 220 Germans who were refugees registered in the Dental Board's foreign register. Pre-Anschluss admissions were controlled by the Home Office alone. After the Anschluss, a committee was established of representatives of the various dental societies assisted by the Home Office and the Co-ordinating Committee. This committee reported in January, 1939, recommending the further admission of 40 Austrian dentists out of a total of 264 applications. The paragraph in the report describing this decision is possibly worth repeating in full:

Consideration of the list of applicants holding medical qualifications and practising dentistry by virtue thereof, mainly occupied the attention of the Committee. There were 264 such applications. The Co-ordinating Committee furnished the Committee with all available information relating to each applicant. . . .

In its preliminary consideration, the Committee undertook to consider every application and to defer limiting consideration to any definite figure until such detailed examination had been completed. It was agreed that the preliminary examination of the list should be with a view to the preparation of a shorter list to consist of those applicants aged 30-55, who were married and had one or more dependents, together with such exceptional cases not complying with the foregoing requirements as were deemed worthy of sympathetic consideration. The list was thus reduced to 93 cases, each of which was considered in great detail at further meetings. . . .

The committee desires it to be noted that the decision to recommend 40 applicants was arrived at entirely on the merits of each case and considerable difficulty would have been experienced in reducing the list to the lower figure which the Committee was aware would have been preferred by influential sections of the profession.

The concluding section of the Dental report recommended that arrangements should be made to distribute applicants—

" . . . so that their services may not be unduly competitive to British practitioners and they may be more readily absorbed into the national life."

The legal profession has strict statutory rules governing practice in the English courts, and although some German and Austrian lawyers have entered this country, only those who are members of the British Bar can practise; but employment has been found for others as court interpreters, etc.

IV

METHODS OF ENTRY INTO THE COUNTRY BY REFUGEES

The following are the various conditions of entry into the country and the obtaining of labour permits at the present time:

1. "Resident" and promise to try to get a job of some sort. (Very rarely granted, usually only to maltreated and im-

prisoned people.) No guarantor* required. Very much more generously granted to Czechs since 15 March 1939.

2. "Resident" permit with no work, but a guarantor, granted to persons over 60.
3. "Resident" with a job of a trainee character and opportunity to go to another country. No guarantor required. Only granted to persons under 36 who are in danger.
4. "Resident" and "Labour" permit granted to persons who have an opportunity to work at a definite job. The job itself must either be a contribution to the art of this country or agreed to by the appropriate professional body (e.g., R.I.B.A.). Guarantor required.
5. "Transit" permit for temporary residence, granted only when all arrangements for proceeding to another country have been made.
6. "Residence" and "Labour" permit to people with capital who are prepared to employ British assistants. (Given to Czechs up to 15 March 1939.)

All these permits can only be granted by the Home Office. At present, they must be applied for *through* one of the Central Committees, but Class 4 could be negotiated direct by the R.I.B.A. for as many cases as they think fit. In addition, there are a few architects already here, brought over by the unofficial A.A. Committee or at the time of the September crisis by Lord Mayor's Fund, etc. These really come under No. 1.

V

REGISTRATION

We received notice from the Registration Council that a committee had been appointed to investigate the problem of aliens in relation to the Registration Act and were given to understand that all foreign architects and refugees will be subject to the normal registration rules, without regard to foreign qualifications. Consequently, whatever their qualifications may be, in their own country, refugees in this country will not be entitled, after August, 1940, to call themselves architect unless—

- (a) they were in practice in this country prior to July 1938.
- (b) they have passed a suitable qualifying examination, which, in the case of men fully qualified in their own country, may be the R.I.B.A. Special Final or an equivalent examination.

VI

STATISTICAL ANALYSIS OF REFUGEES

(A) We received from the Home Office a statement of the number of refugees in Great Britain with labour permits, which gave the position on 23 February 1939 as:

" . . . 16 architects in independent practice
6 employed or assistant
2 in partnership
1 articulated."

Besides the above, it was stated that "there were two refugee architects not following their profession who had not made application for permission to do so." There was, at the date of the letter, "one application before the

* A guarantor is a financially stable British subject who guarantees to maintain completely a refugee during his residence in Britain.

Department for permission to practice in the United Kingdom. One refugee architect was engaged in interior decoration, and one formerly in the United Kingdom had emigrated to Australia."

The Home Office also stated that the majority of the refugee architects were residing in the Metropolitan Area.

(B) We had submitted to us records of all the German, Austrian and Czechoslovakian architects who had applied for help to enter Great Britain either to the R.I.B.A. or to the Architects' German Refugees Committee, or whose names had been forwarded to us from

various quarters. At the date of our last meeting, on 21 April, the figures were as follows:—

			In	
			Gr. Britain	Abroad
16	Germans	.. ..	5	11
21	Austrians	.. ..	7	14
15	Czechoslovakians, including Sudetens	.. ..	3	12
52	Total.			

VII

CONCLUSIONS AND RECOMMENDATIONS

1.—The numbers of architect refugees at present is small. There are only 25 refugees with labour permits in a profession of 12,000 registered architects.

2.—We have records of 52 architects seeking leave to practise in Great Britain; some of these are now in Great Britain on "residence" permits, others are still in Germany, Austria and Czechoslovakia.

3.—Nevertheless, we are aware that however small the number of entrants, some element of sacrifice is involved; but we feel that the architectural profession has a moral obligation to meet the situation with the maximum of goodwill. In comparison with the problem of some other arts and professions, our obligations are small.*

4.—After a careful study of the names before the Committee, we have been able to come to the opinion that at least 18 of the 52 names referred to above are men whose admission to work in this country can be recommended.

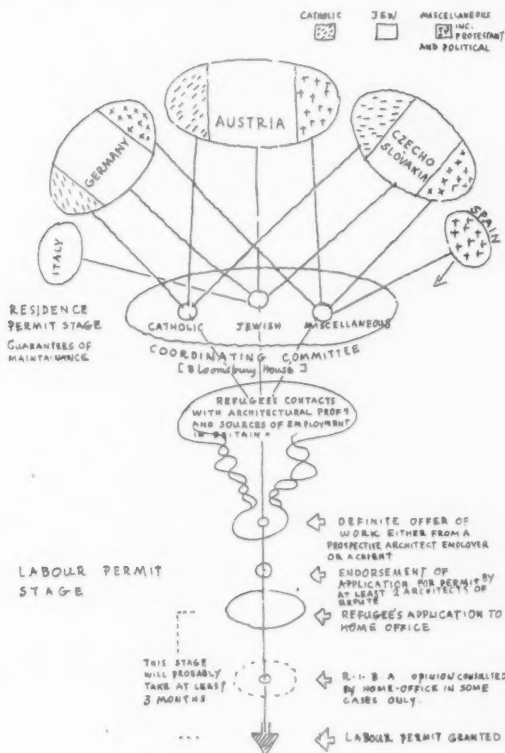
5.—Accordingly, we recommend that the Council should be willing to accept a policy recognising the admissibility of these men, and others who may be brought to the attention of the Council from time to time by this Committee or any new Committee that may be appointed to watch the matter on Council's behalf subject, of course, to the numbers admitted being carefully controlled.

6.—We nevertheless feel that it is useless to end with a resolution that might be difficult to carry into effect, and to propose that steps should be taken to assure that, if admitted, they find suitable employment.

7.—Accordingly, we recommend that a Committee should be empowered at once, possessing powers to act, on the understanding that these men are eligible for entry and that the Committee should have powers to advertise in the Press, to negotiate with the Building Research Station with the Institute's Allied Societies here and overseas and with all other

interested parties and individuals or bodies likely to be of help in finding work. In some cases it is thought that this work might be of positive, constructive value to the profession as a whole, and will cause the minimum disturbance to the British profession.

8.—One of the most important things to which the Committee wish to draw the Council's attention is the position of the Institute in the process of admission (as revealed by the diagram below).



* We understand from the secretary of the Swedish Society of Architects, that the refugee and other foreign architects now practising in Sweden, amount to about 18 per cent. of the qualified Swedish architects.

We feel that some readjustment might be possible so that the Institute should be enabled to act as a "filter" through which applications have to pass prior to their formal submission to the Home Office.

In effect at present there is filtration, but not controlled or assisted in any way by the profession. The Committee feel that if some proper arrangement can be made with the Home Office, for a standing committee to be formed to act in this way, not only will the present tedious process be speeded up, but the Home Office will be relieved of some of the burden that lies on them at present; because they will have reasonable assurance that every application that reaches them has received the profession's approval.

9.—Accordingly, we recommend that suitable overtures to the Home Office should be made, so as to arrange that the Institute's authority is interpolated earlier in the process, i.e., prior to application being made to the Home Office, rather than afterwards.

10.—We also recommend that with the Home Office's collaboration a full register of foreign architects practising in England should be kept at the R.I.B.A.

11.—The Committee realise that even after the British profession has done all it can to admit certain architects to work in this country, a residue of broken and persecuted and elderly members of our profession will remain unhelpt, some of whom have very little hope of finding asylum in any other country. The Committee feel collectively that for these people also the profession in Great Britain has some obligations.

We received reports from one of the Committee's members of the work being done by the small, unofficial committee which was established at the time of the September crisis to deal with the German refugees in Czechoslovakia. This Relief Committee, it was generally agreed, was better constituted than the R.I.B.A. Committee to deal with the essential humanitarian and relief problems. During the last few weeks, the Relief Committee has combined with the representative committees of some other arts and professions and now has obtained official recognition and has direct representation on the Central Refugees Co-ordinating Committee and thereby to the Lord Baldwin Fund.

The humanitarian problems are still enormous in their scope and tragic in intensity. The existing Relief Committee has a heavy responsibility as the only (if, from the point of view of the R.I.B.A., unofficial) representative of the architectural profession, before the National Relief organisations.

12.—We propose that to strengthen the Relief Committee's hand, it should receive the official recognition of the R.I.B.A. Council.

The grant of recognition will moreover go some way towards meeting, on behalf of the R.I.B.A., what may

fairly be considered the British profession's humanitarian obligations to our refugee colleagues.

13.—The action proposed must only be regarded as a partial solution of the present problem and having no bearing on future action that may be necessary if the refugee problem extends.

21 April 1939.

CORRESPONDENCE

From the letter addressed to the Secretary of the Committee from the R.I.B.A. Executive Committee :—

27 April 1939

The report of the Special Committee on Refugees was considered by the Executive Committee of the Council at their meeting on Monday last.

First of all, I was requested by the Executive Committee to convey their congratulations to the Special Committee on Refugees on the production of such a comprehensive and helpful report in the short time which has been at the disposal of the Special Committee.

As a matter of urgency, the Executive Committee have approved the various recommendations contained in the report and they have also agreed that the existing committee should be authorised to continue in accordance with recommendation 7.

From the Chairman of the Committee to the Home Office :—

13 May 1939

DEAR MR. COOPER,

You will remember that when you very kindly gave me an interview on 6 February this year, to talk over the refugee problem in relation to the architectural profession, the R.I.B.A. Committee, of which I am Chairman, had just begun its work.

The Committee's report has now been accepted by the R.I.B.A. Council, and the original Committee has been re-appointed to carry its recommendations into effect.

I enclose a copy of the report, in which you will see the recommendation underlined on page 11 and the following pages. Several of these recommendations, particularly those in paragraphs 9 and 10, relate directly to the Royal Institute's contacts with the Home Office.

In brief, the R.I.B.A. has agreed to press for the immediate admission to practise in Great Britain, of a limited number of men, carefully chosen from a long list of applicants. If they are granted labour permits, as we hope they will be, we intend to implement our willingness to have them here, as is stated in paragraph 7 of the recommendations, by doing all in our power to find them work of a kind that will cause the minimum interference with the British profession, and as far as possible, will enable them to apply their talents constructively.

Some of these men are now in England, and the effect of our recommendation is to plead for the immediate issue of labour permits to them. Some are still abroad; for them, the normal requirement that they should possess a maintenance guarantee, must obviously be maintained, but we suggest that when that condition is fulfilled, they should be granted a labour permit without further delay. This, if it is done will, in effect, be the fulfilment of our recommendation in para-

graph 9; because it will imply the acceptance by the Home Office of the Royal Institutes' imprimatur as sufficient guarantee, without involving individual British architects in the necessity of signing sponsor's letters. The whole process will be speeded up, you will have the added safeguard of the Royal Institute's approval in each case; there should also be some economy of labour effected.

May I have the advantage of another talk with you to obtain your opinions on the report and to explain any points which may not seem clear?

I propose to be in London on 2, 9 or 20 June, and if any time on any of those days will suit you, I shall be happy to make my arrangements to meet your convenience.

I am, Sir,

Yours sincerely,

E. C. BEWLAY,

Chairman, R.I.B.A. Refugee Committee

E. N. COOPER, ESQ.

From the Home Office to the Chairman of the Committee:—

19 June 1939

SIR,

With reference to your letter of the 13th May enclosing a copy of your Committee's report and the discussion at this Department on 9th June, I am directed by the Secretary of State to say that he will be pleased to co-operate with your Committee in dealing with cases of foreign refugees who desire to establish themselves in the United Kingdom as architects. An arrangement has, therefore, been made whereby any such application received in this Department will be referred in the first instance to your Committee for observations, and the Secretary of State will be prepared to give careful consideration to the views of your Committee.

I am, Sir,

Your obedient Servant,

W. JAGELMAN

The Chairman, R.I.B.A. Refugee Committee.

ARCHITECTS' REFUGEE RELIEF FUND

9 Gower Street,
London, W.C.1

DEAR SIR,—This Committee has now received the official recognition of the Council of the Royal Institute of British Architects and we are, therefore, venturing to address all architects who are sympathetic to our aim.

Seven months ago we started work in order to help refugees from Czechoslovakia who for reasons political or racial—(we were not concerned as to which)—were seeking a temporary home in England.

We were always actuated by the belief that the architectural profession should be our first concern, but in the early days we had such a magnificent response to our appeal for hospitality that we were able to help a certain number of non-architects. As the position has clarified itself we have been able to concentrate increasingly on helping architects either to live here until they can be sent overseas, or, in exceptional cases, to continue their careers in this country. The liabilities we have contracted are considerable, and although (as an affiliated body of the Arts and Letters Refugee Committee) we have received a small grant from the Lord Baldwin Fund, our funds are very low indeed and we shall soon have to cease work if we do not receive further support.

There are still about fifty architects in Central Europe (many of them of international fame) who are appealing to us to help them to come to this country—some of them are in Concentration Camps, some in physical danger, some merely destitute. The Council of the R.I.B.A., after an exhaustive examination of employment conditions, etc., by a specially appointed com-

mittee, has agreed that a carefully selected quota (chosen after careful examination of photographs, references, etc., and present degree of danger and suffering) shall be recommended to the Home Office as suitable for immigration to this country.

This in itself does not solve the problem. These men must have the backing of "guarantors" prepared to support them. As long as this Committee functions, these guarantees may be largely formal as we will care for the maintenance of the refugee until he either obtains work here or elsewhere.

We therefore need:

- (a) Money.
- (b) Offers of jobs.*
- (c) Offers to sign guarantees (particulars of what this involves will be supplied on application).

We, in this country, obtained a period of peace at the cost of bringing an entire nation within the orbit of the Reich—with its anti-Semitic and anti-democratic laws. We, in the architectural profession, have often admired the architecture of Central Europe and in better days enjoyed the hospitality of our colleagues there. We want to do what we can to help them now that they are in misfortune. We ask all architects to collaborate with us in one or other of the ways set out above.

We are,

Yours truly,

C. C. HANDISYDE, *Chairman*.

MAX LOCK, *Treasurer*.

S. H. BLOWER, *Secretary*.

* Photographs of executed work may be seen.

The Annual Election of the Council

THE SCRUTINEERS' REPORT

TO THE CHAIRMAN OF THE GENERAL MEETING

MONDAY, 19 JUNE 1939

The Scrutineers appointed to count the votes for the Election of the Council for the Session 1939-1940 beg to report as follows:—

2,621 envelopes were received—632 from Fellows, 1,399 from Associates and 590 from Licentiates.

Of these, 2 from Fellows and 3 from Associates were unsigned.

The result of the election is as follows:—

COUNCIL 1939-1940

PRESIDENT

Mr. Edwin Stanley Hall (unopposed)

PAST PRESIDENTS

Mr. Harry Stuart Goodhart-Rendel (unopposed)

Mr. Percy Edward Thomas (Cardiff) (unopposed)

MEMBERS OF COUNCIL

<i>Elected</i>				Votes
1.	Mr. Lancelot Herman Keay	..	..	1036
2.	Mr. John Nelson Meredith	..	..	986
3.	Mr. Percy James Bartlett	..	..	980
4.	Mr. Cecil George Stillman	..	..	968
5.	Mr. John Swarbrick	..	..	968
6.	Mr. Charles Lovett Gill	..	..	909
7.	Mr. Victor Bain	..	..	887
<i>Not Elected</i>				Votes
8.	Mr. Robert George Roberts	..	..	873
9.	Mr. Arthur Hamilton Moberly	..	..	853
10.	Mr. John Burgess Surman	..	..	816
11.	Mr. Michael Theodore Waterhouse	..	..	783
12.	Mr. Samuel Douglas Meadows	..	..	720
13.	Mr. Frederick John Horth	..	..	712
14.	Mr. Edward Arthur Verger	..	..	676
15.	Mr. James Robertson Adamson	..	..	662
16.	Mr. Thomas Edward Scott	..	..	651
17.	Mr. Frederick Robert Hiorns	..	..	570
18.	Mr. John Bennett	..	..	542
19.	Mr. Charles Herbert Aslin	..	..	471
20.	Mr. Geoffrey Cecil Wilson	..	..	357
21.	Mr. Gilbert Henry Jenkins	..	..	356
22.	Mr. Henry Richard Collins	..	..	290
23.	Mr. James Davidson Hossack	..	..	173

2,616 Voting Papers were received, of which 16 were invalid.

ASSOCIATE MEMBERS OF COUNCIL

<i>Elected</i>				Votes
1.	Professor William Graham Holford	..	..	1225
2.	Mr. Charles Anthony Minoprio	..	..	833
3.	Mr. Roger Davys Manning	..	..	824
<i>Not Elected</i>				Votes
4.	Mr. John Albert Pinckheard	..	..	755
5.	Mr. James Thomas Castle	..	..	664
6.	Mr. Richard Alfred Hardwick Livett	..	..	597
7.	Mr. William Austin Daft	..	..	521
8.	Mr. Derek Lawley Bridgwater	..	..	408

9.	Mr. Clifford Ewart Culpin	..	..	334
10.	Mr. Donald Evelyn Edward Gibson	..	..	289
11.	Mr. Wilfrid Hurford Wingate	..	..	269
12.	Mr. Robert Oliver Harris	..	..	237
13.	Mr. Winston Walker	..	..	106

2,616 Voting Papers were received, of which 38 were invalid.

LICENTIAE MEMBER OF COUNCIL

<i>Elected</i>				Votes
1.	Mr. Clarence Bertram Parkes	..	..	928
<i>Not Elected</i>				Votes
2.	Sir William F. V. M. Milner, Bt.	..	..	895
3.	Mr. Malcolm Mactaggart	..	..	309
4.	Mr. Frederic Arthur Broad	..	..	182

2,616 Voting Papers were received, of which 15 were invalid.

REPRESENTATIVES OF ALLIED SOCIETIES IN THE UNITED KINGDOM OR THE IRISH FREE STATE

- (1) *Six Representatives from the Northern Province of England:—*
 Mr. Stanley Wayman Milburn (Northern Architectural Association).
 Mr. Charles Gustave Agate (Manchester Society of Architects).
 Mr. Harold Alfred Dod (Liverpool Architectural Society).
 Mr. Cecil Leckenby (York and East Yorkshire Architectural Society).
 Mr. Frederick Lawrence Charlton (West Yorkshire Society of Architects).
 Mr. William George Davies (Sheffield, South Yorkshire and District Society of Architects and Surveyors).
- (2) *Five Representatives from the Midland Province of England:—*
 Lt.-Col. Herbert Graham Wicks (Birmingham and Five Counties Architectural Association).
 Mr. Arthur Francis Bryan (Leicester and Leicestershire Society of Architects).
 Mr. Henry Francis Traylen (Northamptonshire, Bedfordshire and Huntingdonshire Association of Architects).
 Mr. Albert Edgar Eberlin (Nottingham, Derby and Lincoln Architectural Society).
 Mr. Theodore Gilbert Scott (East Anglian Society of Architects).
- (3) *Six Representatives from the Southern Province of England:—*
 Mr. Reginald Francis Wheatly (Devon and Cornwall Architectural Society).
 Mr. Charles William Pike (Wessex Society of Architects).
 Mr. Egerton Alwyn Lawer Martyn (Berks, Bucks and Oxon Architectural Association).
 Mr. Antoine Englebert Geens (Hampshire and Isle of Wight Architectural Association).
 Mr. Hugh Patrick Guarin Maule (Essex, Cambridge and Hertfordshire Society of Architects).
 One Representative to be nominated by the Council of the South-Eastern Society of Architects.
- (4) *Four Representatives of Allied Societies in Scotland, nominated by the Council of the Royal Incorporation of Architects in Scotland:—*
 Mr. John Ross McKay (Edinburgh).
 Colonel George Gardner McLean (Glasgow).

Mr. Thomas Forbes MacIennan (Edinburgh).
Mr. Robert Matthew Mitchell (Perth).

(5) *One Representative of Allied Societies in Wales, nominated by the Council of the South Wales Institute of Architects :—*

Mr. Cyril Francis Bates (Newport, Mon.).

(6) *Two Representatives of Allied Societies in Ireland :—*

Mr. Harry Allberry (Royal Institute of the Architects of Ireland).

One Representative to be nominated by the Council of the Royal Society of Ulster Architects.

REPRESENTATIVES OF ALLIED SOCIETIES IN THE BRITISH DOMINIONS OVERSEAS :—

To be nominated by the Councils of each of the following :—

The Royal Architectural Institute of Canada.

The Royal Australian Institute of Architects.

The New Zealand Institute of Architects.

The Institute of South African Architects.

The Indian Institute of Architects.

REPRESENTATIVE OF THE ARCHITECTURAL ASSOCIATION (LONDON)

Mr. John Murray Easton.

REPRESENTATIVE OF THE ASSOCIATION OF ARCHITECTS, SURVEYORS AND TECHNICAL ASSISTANTS

Mr. Roderick Charles Fisher.

CHAIRMAN OF THE BOARD OF ARCHITECTURAL EDUCATION

Mr. Hubert Lidbetter.

CHAIRMAN OF THE R.I.B.A. REGISTRATION COMMITTEE

Mr. Thomas Arthur Darcy Braddell.

CHAIRMAN OF THE R.I.B.A. OFFICIAL ARCHITECTS' COMMITTEE

REPRESENTATIVE OF THE R.I.B.A. SALARIED MEMBERS' COMMITTEE

HONORARY AUDITORS

Mr. James Davidson Hossack (unopposed).

Mr. James Maclaren Ross (unopposed)

ERNEST G. ALLEN

CECIL H. PERKINS

ROBERT W. PITE

D. H. BEATY-POWNALL

BASIL M. SULLIVAN

ERNEST W. BANFIELD

GEORGE J. J. LACY

RONALD TOPHAM

Chairman.

Scrutineers,

12 June 1939

STUDENTS OF ARCHITECTURE AND THE MILITARY TRAINING ACT

The R.I.B.A. Emergency Panel have been authorised by the Ministry of Labour to make the following statement :

(1) Full-time students now in schools of architecture will be permitted to postpone their liability to be called up for military training until a date not later than one month after the conclusion of their course of study as approved by the school authorities. Any student who wishes to obtain such a postponement should make application on a form to be obtained from the local office of the Ministry of Labour, and will be required to have the form certified by the school authorities, stating :

(a) that he is a full-time student ; and

(b) the date on which his approved course of study is due to terminate.

The form of application should ordinarily be forwarded to the address given not later than 14 days after the date of the applicant's registration. Postponement will only be granted for periods of one year at a time, and application must be made annually for renewal of postponement. Students in those schools of architecture which provide only for the Intermediate Examination and who, at the conclusion of the present school course desire to proceed to another school for full-time training in preparation for the Final Examination, may be granted postponement for the whole period of their full-time training in both schools.

(2) Postponement will also be granted to students entering full-time schools of architecture in September or October 1939, but they will not be required to apply for postponement until they reach the age at which they would become liable to register for training.

(3) Those proceeding to schools of architecture after October 1939 will not be given permission, otherwise than on grounds of hardship, to postpone their military training. It is, however, proposed to grant permission to anticipate liability for military training in order to enable men to undergo their military training before proceeding to a full-time school of architecture. Those who intend to become full-time students and who desire to anticipate their military training should apply as early as possible to the local office of the Ministry of Labour on a special form which will be provided. It is recommended that wherever possible an application for anticipation of military training should be supported by a statement from the authority of the school to which the man intends to proceed. It has been decided that where military training is anticipated, training may not commence before the applicant reaches the age of 17½.

(4) Students in evening schools, part-time schools, or preparing themselves privately for their professional examinations may apply for postponement of military training, and such applications will be referred, if necessary, to the Military Training (Hardship) Committees. Applications should be made through the local office of the Ministry of Labour when the age for registering is reached. An application for postponement must be made on the form supplied for the purpose, and should, where possible, be supported by a statement from the school authorities or some other responsible person.

Students in the above class may also apply for permission to anticipate their military training, such application being made in the same way as that for postponement.

Book Reviews

A.R.P. HANDBOOK No. 5

At last ! The long-awaited A.R.P. Handbook No. 5 on Structural Defence* has been published.

Before discussion of its contents, some account may well be given of its creation. Early in 1936 the Home Secretary appointed a "Structural Precautions Committee," which consisted of representatives of the leading technical institutions, including the R.I.B.A., to advise on the contents of the book. The Committee and its sub-committees presented several reports covering the whole range of structural A.R.P., though they were handicapped by lack of exact knowledge on several points which research is only now making available.

The Committee covered far more ground than is indicated in this publication. Their work has appeared in several other directions, notably in the Provisional Code attached to the Civil Defence Bill, though in all cases it has served only as a basis for the actual publications which have been drafted by the staff of the A.R.P. Department.

Handbook No. 5 underwent several changes. At first conceived as an "omnibus" volume, much of its original contents have been or will be issued in the form of Building Codes. Also the R.I.B.A. are to be asked to undertake the preparation of a publication on the architectural aspects, for and in collaboration with the A.R.P. Department, as was recently announced by Dr. Stradling in his capacity as adviser to the Home Office.

Consequently, Handbook No. 5 consists chiefly of research data on bombs, their characteristics and effects, the principal technical requirements of shelters and some general notes on principles of structural design to resist bombing in new and existing buildings. Much of the data on the performance of bombs is abstrusely mathematical. Useful as a theoretical groundwork of the subject, all this has long been needed. It should correct several unsound assumptions that have been the basis of many early designs—often considerably publicised. Nevertheless, the whole story is not told, for the very good reason that the data given is derived from tests on British bombs (as it can only be); the Royal Air Force would obviously object to publication of too much information on the effectiveness of their weapons.

There is much useful information on that contentious point—protection against direct hit. It is clearly shown that there is practically no such thing as "bomb-proof," though that term has been freely applied to many designs by their sponsors. In building, the term "fire-

proof" has been replaced by "fire-resisting," because everything depends on the heat and duration of the fire. In the same way, bomb resistance depends on the size, construction, and fusing of the bomb, and a really "bomb-proof" construction would need, in theory at least, to resist the strike of more than one bomb of the heaviest size on the same spot, whether that spot were the roof, walls or entrances of a shelter.

Perhaps the most interesting revelation is that a delay-action bomb travelling in the earth does not do so in a straight line. Its path is usually curved, and it may even turn upwards. Consequently, a burster course at ground level may be outflanked, the bomb turn inwards, and deliver a fully tamped explosion at the shelter wall or even beneath its floor. Since a 500 lbs. medium case bomb can travel 40 feet in clay (25 feet in gravel) before exploding, it becomes clear that the sides and floor of a bomb-resisting shelter are just as important as the roof.

The book throws doubt on the efficacy of burster courses provided independently of shelter roofs proper. Should the bomb penetrate the burster, the resultant explosion would be fully tamped. Consequently, it is considered preferable to put all the concrete in one single very thick roof slab, a course followed by the French, who, with their twenty years' research in the design of the Maginot Line, are probably the most experienced nation in the world in this type of structure. Generally, it appears that, given a narrow span, a thickness of from 5 to 6 feet of specially reinforced concrete in a single slab, having a heavy sheet steel soffit, is required for defence against a single hit by a 500 lbs. medium case bomb with a fuse of slight delay. In mined or tunnelled galleries, a depth of earth is required of from 60 to 80 feet, depending on the soil, and assuming no exceptional strength in the tunnel lining.

The information on blast is by far the most thorough analysis of that effect yet published. The limited nature of extreme blast effect is explained, together with such phenomena as suction and selective destruction of objects. In general it is concluded that the blast of a 500 lbs. medium case bomb at 50 feet in the open will subject wall panels to an equivalent static load of the order of 3 to 6 lbs. per square inch. From preliminary tests it has been concluded that brickwork in cement mortar has a much higher lateral strength than has hitherto been assumed, and that in most cases brick walls will withstand the blast of a 500 lbs. bomb at 50 feet. In one test a 9 inch wall panel 9 feet square withstood 10 lbs. per square inch.

Under "Shelter Requirements" are some very useful

**Air Raid Precautions Handbook No. 5. Structural Defence (First Edition).* H.M. Stationery Office. 2s. 6d.

figures on size of doorways and speed of entry which should establish design in this direction on sound lines. Ventilation is very thoroughly discussed. It appears that the two over-riding considerations in this respect are dissipation of bodily heat and a sufficient rate of ventilation. The former is best achieved in underground shelters, and the latter is ensured by 150 cubic feet of air per person per hour. It is interesting to note that in "open" shelters the heat of human bodies often induces an air change which may be as high as the figure just given.

The chapters on new and existing buildings do not tell us much that is not already fairly common know-

ledge. The information is rather scrappy and vague, and will doubtless be somewhat disappointing to those who are looking to Handbook No. 5 to tell them how to design and plan buildings for A.R.P. requirements. Questions of cost are not regarded, nor are the points discussed always of practical use; for instance, there is much information about the impregnation of timber to make it fire-resisting, but no indication that the processes are too costly for use with the structural timbers of ordinary building. These two chapters should be regarded as no more than an introduction to the projected book on the architectural aspects of A.R.P.

THE BAUHAUS SPIRIT

These two books* are the record of a long and successful struggle to establish valid artistic values in a world not generally adapted to receive them. To English eyes it might seem that the outcome of the movement for which the Bauhaus stands was the happy result of a long and continuous development, but from the detailed history of the Bauhaus itself, and especially from Moholy Nagy's book, one is given an impression of a tension which at times is nearly unbearable. It would seem as though Gropius and his collaborators were people in possession of vital advance information which it was necessary they should transmit to the world around them. But they themselves were not in possession of all this information, being under the necessity of completing their own education and of reaching a stage where they might act with more perfect knowledge and in greater confidence. To make it worse they had to carry out their difficult task in a country in the throes of great suffering and misunderstanding and within economic conditions which worsened every year. It is small wonder, then, that something of over intellectualism should pervade these two books, something unquiet and forceful. Only the character of Gropius brought the movement through, and I have the impression both from my knowledge of him and from the history of the Bauhaus itself that he was well aware of the dilemma in which he stood, and that the Bauhaus was a necessary substitute for a quieter and more evolutionary transference of experience from master to apprentice, the chronic nature of the times forcing upon him the creation of machinery that might act as an alternative means of spreading his experience to as wide a number of his fellows as possible.

Gropius' analysis of the structure within which creative freedom might be found in the contemporary

world was imaginative and sensitive over the whole range of possible action. Furthermore, and it was in this that the Bauhaus succeeded where brilliant individuals in various parts of the world failed, it concerned itself with the utmost modesty with what took place within the individual. He realised that it is not possible to teach architecture or to teach any art, and that experience may be only transmitted from one who has to others who are capable of receiving providing the atmosphere is charged with the necessary tension.

What the Bauhaus set out to do was to offer means by which students might become more sensitive and aware of the materials and of the programmes of their work, from a sense of touch of things near at hand to the imagination for the wider circles of contemporary living. Let me quote from Gropius himself:

"What the Bauhaus preached in practice was the common citizenship of all forms of creative work, and their logical interdependence on one another in the modern world. It wanted to help the formal artist to recover the fine old sense of design and execution being one and the same, and make him feel that the drawing board is merely a prelude to the active joy of fashioning. Building unites both manual and mental workers in a common task. Therefore all alike, artist as well as artisan, should have a common training; and since experimental and productive work are of equal importance, the basis of that training should be broad enough to give every kind of talent an equal chance. As varieties of talent cannot be distinguished before they manifest themselves, the individual must be able to discover his proper sphere of activity in the course of his own development. Naturally the great majority will be absorbed by the building trades, industry, etc. But there will always be a small minority of outstanding ability whose legitimate ambitions it would be folly to circumscribe. As soon as this elite has finished its communal training it will be free to concentrate on individual work, contemporary problems, or that inestimably useful speculative research to which humanity owes the sort of values stockbrokers call 'futures.' And since all these commanding brains will have been through the same industrial mill they will know, not only how to make industry adopt their improvements and inventions, but also how to make the machine the vehicle of their ideas."

But I do not imagine that the curriculum of the Bauhaus is one that should necessarily be repeated here, even though no part of the field it covered can remain untouched by architectural education.

**Bauhaus, 1919-1928*. Edited by Herbert Bayer, Walter Gropius, Ise Gropius. 224 pp. Illustrated. London: Allen & Unwin. 1939. 16s.

The New Vision. By L. Moholy Nagy. 4to. 208 pp. Illustrated. London: Faber & Faber. 16s.

Such education in England seems to me to be still too formal and academic, too competitive, divorced from industry and building, still canalised in its profession and with vast areas of artistic unawareness. And above all it lacks that high quality which distinguished the Bauhaus. The young people among us feel this strongly, not only in London where this might be expected, but in the provincial centres, the responsiveness of the contemporary student to new stimuli being an index of our need for a recasting of educational machinery. With this in our minds the history of the Bauhaus is a document of the very highest value, because while it gives an account of the building up of a curriculum, this account is impregnated with the spirit of the fine intelligences which gave it life.

I feel this spirit less in Moholy Nagy's book. Maybe I am unintellectual in my approach, but I sense the exclusion of much that was important in my own education, the observation of natural objects, for instance, for which Moholy Nagy's synthetics, though brilliant, are no substitute. His attempt to make a text-book of the remoter workings of the creative instincts fails for me, for even with the most serious attention to the text I am unable to grasp the significance of such expressions as "The fluctuating interpenetration of space energies," or, vaguely understanding them, to be moved. Also I feel that many of the artistic experiences to which the book is a guide have a wider and less revolutionary application than they have been given here.

Finally, it is as a scientific exploration that I find the book interesting and highly justifiable, and so long as I am not called upon to affirm my belief in the validity of the various experiments into spatial, tactile values, and so on, but only to be quickened by the sense of Moholy Nagy's discoveries, then I may applaud his boldness and vision and turn back to the Bauhaus to find at what points our own creative instincts are stirred to the solution of social and artistic problems.

E. MAXWELL FRY [A.]

ROOFS

ROOFING: ESTIMATING, APPLYING, REPAIRING. By James McCawley. 8vo. 386 pp. Pub. by author. 175 Fifth Avenue, New York. 1938.

This is not just another book about slating and tiling, but one which contains really practical advice, and very full particulars of the more recent types of roofing as well. Starting with a historical sketch which is rather cinematographic in style—jerky and disjointed—it then proceeds to deal in succession with bituminous roofing, steep roofing, and metal roofing, before discussing ancillary details such as flashings, gutters, and so forth. There is a chapter on repairs, and concluding chapters on the business of roofing, estimating, and such miscellaneous details as fixing lightning conductors, and special scaffolds.

It is natural that, even when treating the historical antecedents of current forms of roofing, special regard should be paid to those forms which have had American developments. In this section asphalt, tar, pitch, asbestos and felt are well treated. There is one obvious slip—the Saxon Chapel with stone roof is surely at *Bradford-on-Avon*, not Stratford. The chapter headed "Built-up Roofing" is a valuable treatise on a subject about which little has been written. It is interesting to learn that where asphalt is used in England pitch is commonly employed in America. Types of built-up roof using respectively copper and pitch, and sail-canvas and white lead will be new to most of us. Insulation and water-cooling for flat roofs are not neglected, and current British practice in what the author calls "Promenade deck roofs" is fully described.

The section on pitched roofs—"steep roofs," as this book has it—is less informative because more hackneyed. Shingling is well described and illustrated; slating less so, though round valleys and what are suitably named "canoe valleys" are clearly shown. Swept and laced valleys are recognised, but unrevealingly. Tiling is chiefly Spanish tiling. It is strange to English ears to hear our plain tiling referred to as "flat shingle tile," and still more strange to encounter the term "residing with tile," which does not mean living with a tile, but replacing weatherboard by tile-hanging. Thatching (most unexpectedly) is better treated than in most works on roofing—an essential advantage is emphasised, viz.: that it "can be carried over changes of pitch that require complicated treatment in other materials." The illustration given unfortunately does not show a typical thatch form, and is a rather moth-eaten specimen without that likeness to well-combed fur which good thatch possesses. Under Metal Roofing considerable space is given to metal shingles or tiles, which do not appeal in this country. Not the least useful things in the book are the out-of-the-way details given of such items as flashing of projecting pipes and structural members, and rainwater outlets from flat roofs.

E. G.

PAINT

A HANDBOOK ON PAINT: COLOUR AND CONTROVERSY; COLOUR AND THE INTERIOR DECORATOR. By John Betjeman. **COLOUR AND THE ARCHITECT.** By Hugh Casson. COLOUR AND THE BUILDER. Silicate Paint Co. London. 1939.

CAMOUFLAGE AND AERIAL DEFENCE. Silicate Paint Co. London. 1939.

These two little books set a new style and quality in advertising literature, and the company that has had the intelligence (or the bravery) to employ Mr. Betjeman and Mr. Casson to discuss the use of colour and Mr. Robert Harling to design the typography of their booklets deserves attention from architects. Both the essays in the *Handbook on Paint* are lively and provocative, but they are also full of good advice. Mr. Betjeman ends with seven general rules, not all orthodox—he would have even "olde worlde" beams painted white.

Mr. Casson gives an architect's view of colour as an essential element of architecture and not merely a finish, hastily and wearily settled, when everyone is heartily tired of the job; he also illustrates both essays with four drawings the ingenuous simplicity of which conceals their competence as illustrations.

The latter half of the book consists of useful technical data.

The camouflage book is as attractively got up, and is a slight but suggestive introduction to a subject which is much too complicated to be explained or illustrated in under 30 pages.

WREN SOCIETY XVI

THE WREN SOCIETY. Vol. xvi. 4to. 216 pp. + 22 plates. Oxford University Press. 1939. Subscribers only.

The Sixteenth Volume of the Wren Society completes the publication of the material so far discovered relating to St. Paul's. The Contract Book from 1675 to 1709, the Minute Book from February 1685-86 to 1724, and a shortened version of the Building Accounts Books from 1668 to 1675. The last section is a sort of prefix to volume XIII, since it was not discovered until after the publication of that volume that the Paper Set of the accounts, which was used for the publication, lacked duplicates of the 1668 to 1675 volumes, which are only to be found in the Vellum Set. The Minute Book from 1685-86 onwards is the only one at present known, and it is not altogether outside the bounds of hope that an earlier volume may one day appear. These are the residue of the documents relating to St. Paul's.

The rest of the volume has a certain human as well as a documentary interest, and relates to the *Frauds and Abuses* controversy of 1712-13, after which Wren almost wholly disinterested himself from the meetings of the Commission. Frauds and abuses are always of interest, and this is an arresting as well as a rather mysterious scandal. Indeed, so curious is the infatuation of the Commissioners for Jones and his cast-iron fence that one is tempted to seek some explanation from the psychologist!

The editors have conceived that "it was useless, and in fact impossible, to republish the entire set of the Six Pamphlets" connected with the controversy as well as the various other documents. Whether this impossibility is due to the terrible language in which they are couched, or some other reason, is obscure, but the resulting attempt at letting the story tell itself, like one of a certain class of modern detective story, is not altogether satisfactory. The story is very intricate and we cannot feel quite certain that we have been told everything.

As a matter of fact, the clearest account (and also the least edifying in detail) is given in Wren's own memorandum, published in the *Portland MSS.* X., 124 ff., and mentioned by the editors on p. 173. The editors admit that "it seems earlier than the actual pamphlets," but say "it is not necessary to give it here as all material points are in the pamphlets." They also call it "a long statement, with some marginal notes, said to be by Sir Chr. Wren."

The Historical MSS. Commission categorically states: "This note and the marginal notes are in the handwriting of Sir Christopher Wren." It is therefore not merely the earliest, but, from Wren's angle, the most authoritative account of the whole dispute, and it should not have been passed by with an unsupported word of doubt that perhaps Wren didn't write it after all. Either the whole controversy had better be buried or it should be given in full: since the honesty of a man of Wren's quality and character is a subject of as much moral or historical importance as the trustworthiness of Edmund Burke. As a matter of fact, the worst one can say of Wren is that he was guilty of pardonable ill-temper and malice (the latter no less pardonable): to conceal this from the Wren Society's readers is to suggest much worse.

The corpus of material illustrating St. Paul's is usefully completed in this volume by including a reduced plate of Sir Mervyn Macartney's isometric projection of the Cathedral, a series of the late eighteenth-century engravings of the Cathedral by Malton, and valuable material from the archives in the surveyor's office.

ELLIS K. WATERHOUSE

ALFRED STEVENS

ALFRED STEVENS. *A Biography with new material by Kenneth Romney Towndrow, with a preface by D. S. MacColl.* 4to. xxviii + 294 pp. + 42 plates. London: Constable. 1939. 21s.

This new book on Stevens fills a serious gap in the history of British art, for Stevens has been almost forgotten by this generation with the exception of a few devotees like Mr. MacColl and Mr. Towndrow. His work has been ruthlessly removed from its setting in Dorchester House and destroyed in Kensington Palace Gardens; while the only remaining complete example of a decorative scheme by him, at Deysbrook Hall, near Liverpool, is being allowed to decay for want of interest. Even his name is confused with the mediocre Belgian painter of "fashionable beauties." It is to be hoped that Mr. Towndrow's book, obviously the fruit of much devoted research, will reawaken interest not only in England's greatest sculptor but also one of her greatest decorative painters since Gothic times.

Stevens was born in 1817 of humble parentage and on showing a precocious ability as a painter and draughtsman he was sent to Italy at the age of fifteen, from where he came back in 1842 having acquired a unique education in painting and sculpture and their relation to architecture. On his return he entered for various competitions including the decoration of the Houses of Parliament and the monument to commemorate the 1851 Exhibition; he also painted some magnificent portraits and was a pioneer in industrial design. Nevertheless, his genius remained almost unrecognised by a nation which has always preferred the picturesque to the classic. Stevens' only great opportunity, the Wellington Monument, was hampered by the stupidity and malice of Government departments, and was only completed after his death.

Mr. Towndrow has incorporated in this book many new facts of the greatest interest, and he has been fortunate in the collaboration of Mr. MacColl who is the greatest living authority on Stevens. The author draws a most sympathetic portrait of the man and his courage in the face of great difficulties. He traces with skill his sojourn in Italy and the various adventures which befell him; and his innate good taste in going to the roots of Italian art instead of being confined by the artistic shibboleths of the nineteenth century. The following years are examined with great care, and—the climax of the book—the tragic delays and difficulties of the Wellington Monument are clearly stated. Mr. Towndrow is at great pains to disprove that too often repeated generalisation that Stevens is only a belated follower of Michael Angelo, but does now show the obvious influence of Raphael whom Stevens greatly admired, as his many copies from the Urbinate's decorative scheme in the Vatican testify. One must regret also that Mr. Towndrow in his admiration for Stevens' sculpture does not state Stevens' unique position in English art as a decorative painter as strongly as he might.

The only serious adverse criticism of Mr. Towndrow's admirable book is in the choice of illustrations. There is only one example of Stevens' decorative ability, when reproductions from Stannus' book of the Kensington Palace Gardens decorations would have been welcome as also the reissue of Mr. MacColl's photographs of Deysbrook in more permanent form. There is a superfluity of red chalk drawings which, if the most well known, are not the most important part of Stevens' output; and the inclusion of both a photograph of the artist and Legros' flaccid portrait seems unnecessary, while the latter is neither kind to Stevens nor to his great protagonist.

GEORGE WARNER ALLEN

Review of Periodicals

Attempt is made in this review to refer to the more important articles in all the journals received by the Library. None of the journals mentioned are in the Loan Library, but the Librarian will be pleased to give information about price and where each journal can be obtained. Members can have photostat copies of particular articles made at their own cost on application to the Librarian.

Normally the journals referred to in this review, all of which are in the R.I.B.A. reference library, cannot be borrowed. Members are, however, asked to encourage their local public libraries and their local society's library to take as many journals as they can afford; and they are asked, for the convenience of local members, to notify the R.I.B.A. of what journals are known to exist in public or private hands in their own neighbourhood.

SCHOOLS

ARCHITECT AND BUILDING NEWS. 1939. 9 June. P. 256. Albany Senior School and Clinic, Enfield, by Frank Lee [L.] and H. T. Townsend [A.].

ARCHITEKT S.I.A. (PRAGUE). 1939. No. 5. P. 82. Results of a competition for Elementary and High Elementary Schools for boys and girls, and Infant School and Nursing Home for children in Prague.

EXHIBITIONS

R.I.B.A. JOURNAL. 1939. 12 June. P. 776. The British Pavilion at the New York World's Fair, by Stanley Hall & Easton and Robertson [FF.].

ARCHITECTS' JOURNAL. 1939. 15 June. P. 1033. General review of the New York World's Fair by John Gloag.

ARCHITETTURA (ROME). 1939. April. P. 197. Large exhibition in Rome devoted to the applications of Italian minerals.

OFFICES

ARCHITECT AND BUILDING NEWS. 1939. 9 June. P. 269. The Detroit Edison Office Building, Detroit, by J. C. Thornton. Artificially ventilated throughout, all light is supplied through glass-brick panels.

ARKKITEHTI (HELSINGFORS). 1939. No. 3. P. 33. Drawings and excellent photographs of the head offices of a life insurance company in Turku. The building includes lettable space in the form of a café with confectionery and bakers' shop, other shops, restaurant, offices, and flats. Architect: Erik Bryggman.

SHOPS

ARCHITECTURAL REVIEW. 1939. June. P. 291. The completed Peter Jones store, Sloane Square, by William Crabtree [A.], Slater and Moberly [FF.], and Prof. C. H. Reilly [F.].

INDUSTRIAL

ARCHITECT AND BUILDING NEWS. 1939. 16 June. P. 286. Extension to printing works at Watford, by Stanley Peach and Partners. Accommodation is provided for new rotary machines and compositors' department.

GARAGE

ARCHITECT AND BUILDING NEWS. 1939. 9 June. P. 266. Garage for the vans of Daily News, Ltd., at Commercial Wharf, by Sir E. Owen Williams.

HOSPITALS

ARCHITECTURAL REVIEW. 1939. June. P. 275. Hospital at Chichester by C. G. Stillman [F.]. At present accommodating 144 beds, extension to 432 is anticipated.

ARCHITECT AND BUILDING NEWS. 1939. 16 June. P. 298. Large Hospital at Setif, Algeria, by X. Salvador.

HOSPITAL AND NURSING HOME MANAGEMENT. 1939. June. P. 163.

Maternity block in the Royal Infirmary, Edinburgh, by T. W. Turbull and J. Millar [FF.].

HOSPITAL AND NURSING HOME MANAGEMENT. 1939. June. P. 169.

Article on the planning of an out-patients' department by H. T. Payne, dealing with the Royal London Ophthalmic Hospital's department by A. Smithers [F.].

L'INGEGNERE (ROME). 1939. No. 5. P. 397. Large new General Hospital in Milan.

RELIGIOUS

ARCHITECT AND BUILDING NEWS. 1939. 16 June. P. 289. Oxford Crematorium, by H. R. W. Orr [A.].

ARCHITEKTURA I BUDOWNICTWO (WARSAW). 1939. No. 11-12. P. 357.

Project by B. Pniowski for a large church in Warsaw.

HOUSING

ARCHITECTURAL REVIEW. 1939. June. P. 282. Row of brick and timber cottages at Stratford-on-Avon for Flower's Brewery workers, by F. W. B. and F. R. S. Yorke [F./A.].

HOUSING AND TOWN PLANNING (STUTTGART). 1939. No. 1. Articles on Rural Housing in Great Britain, Denmark and Holland, and dwellings for agricultural workers in Germany.

ARCHITETTURA (ROME). 1939. April. P. 249. Recent rural colonies and housing in Libya.

BAUKUNST (BERLIN). 1939. No. 6. P. 181. Several recent housing schemes of three-storey flats in Berlin.

AIRPORT

ARCHITETTURA (ROME). 1939. April. P. 240. The reconstruction of the Tempelhof airport in Berlin.

MATERIALS

R.I.B.A. JOURNAL. 1939. 22 May. P. 725. Article on the Rhom brick. An interesting new type of Rhom brick, designed for reinforcement, is described.

ARCHITECTURAL REVIEW. 1939. June. P. 307. Supplement dealing with solid timber; staircases, floors, doors, wall covering, external work, decoration and fittings, seasoning. Also an index of English timber uses.

NATIONAL BUILDER. 1939. June. P. 365. Article on internal partition blocks, by C. C. Handisyde [A.].

ARCHITECTURAL RECORD (NEW YORK). 1939. May. P. 78.

Article on trends in the development of building materials, by M. Lowenthal. "In varying degrees materials of construction become units of assembly. This trend has an important bearing on the status of the designer and his relation to building operations; he is placed increasingly in a position where he must specify performance of materials and equipment not fabricated under his supervision."

CONSTRUCTION

THE STRUCTURAL ENGINEER. 1939. June. P. 286.
Article on "Time and its effect in relation to structures," by F. S. Snow, dealing with design, job organisation, plant layout, site supervision, and organisation of labour.

BAUMEISTER (MUNICH). 1939. No. 5.
Flat roofs. Details of parapets, gutters, rainwater connections, handrail fixing, etc.

EQUIPMENT: HEATING, VENTILATION, Etc.

HEATING AND VENTILATING ENGINEER. 1939. May. P. 502.
Article on chemical dehumidification in the U.S.A., and the use of adsorbents and absorbents, by C. Tasker.

PENCIL POINTS (NEW YORK). 1939. May. P. 329
Article on "Wiring is part of planning," by H. O. Chapman, with tables of minimum domestic lighting and power requirements and their location, and of the desirable standards for wiring adequacy as recommended by the National Adequate Wiring Bureau.

TOWN AND COUNTRY PLANNING

PROCEEDINGS OF THE ROYAL INSTITUTION OF GREAT BRITAIN. 1938-39. No. 124. P. 558.
Paper by Sir Charles Bressey on "Bigger London or Better London."

JOURNAL OF THE TOWN PLANNING INSTITUTE. 1939. May. P. 219.

Article on the location and design of housing estates, by S. Pointon Taylor [F.].

L'ARCHITETTURA ITALIANA (TURIN). 1939. No. 3. P. 72.
Two new mining towns in Italy, Arsia and Carbonia. Planned by G. Pulitzer Finali, and C. Valle & I. Guidi, respectively.

ARCHITETTURA (ROME). 1939. March. P. 299.
Article on new industrial towns and housing, with good plans and photographs. Amongst the towns dealt with are Zlin, Sundhall's Co-operative housing near Stockholm, Vahakallio's Kankopaa and Aalto's Sunila in Finland.

HISTORICAL

R.I.B.A. JOURNAL. 1939. 22 May. P. 706.
Article by Arthur D. Sharp giving an account of the various works of reparation to Westminster Abbey executed under J. L. Pearson during the years 1884 to 1897.

R.I.B.A. JOURNAL. 1939. 12 June. P. 757.
Article on the rise and decline of the terrace house in England, by H. J. Hitch [A.].

ARCHITECTURAL REVIEW. 1939. June. PP. 273-299.
Photographs of the Crystal Palace in Hyde Park in 1851.

ARCHITECTURAL REVIEW. 1939. June. P. 287.
Well illustrated article on Byzantine frescoes in the Bucovina, Roumania, by D. Craik and Ruth Churchill [A.A.].

LANDSCAPE DESIGN

LANDSCAPE AND GARDEN. 1939. Spring. P. 23.
Article by Christopher Tunnard on his collaboration with S. Chermayeff [F.] over the planning of the garden to the latter's house at Halland, Sussex.

LANDSCAPE AND GARDEN. 1939. Spring. P. 37.
Article on garden design in relation to modern architecture, by Maxwell Fry [A.].

ARCHITECTURAL RECORD (NEW YORK). 1939. May. P. 71.
Article on landscape design in the urban environment, by G. Eckbo, D. U. Kiley and J. C. Rose.

ÆSTHETICS

APXNTEKTYPA (MOSCOW). 1939. No. 4. PP. 12, 25.
Article on false classicism by D. Arkine, and on false monumental character by V. Vladimirov.

A.R.P.

ARCHITECTS' JOURNAL. 1939. 8 June.
The second Civil Defence number by F. J. Samuely and C. W. Hamann, dealing with the Code, the Home Office Memorandum No. 10 on basements, domestic surface shelters, and other relevant publications.

GENERAL

ARCHITECTS' JOURNAL. 1939. 30 March. P. 523.

ARCHITECT AND BUILDING NEWS. 1939. 24 March. P. 350.

The French Institute, Queensberry Place, South Kensington, by A. J. Thomas [F.] and Patrice Bonnet. Built in two sections; the first, by Mr. Thomas, is used for educational purposes, and comprises classrooms, lecture rooms, laboratories, gymnasium, etc., and the second, by M. Bonnet, is a reception suite, with conference hall and library.

ARCHITECT AND BUILDING NEWS. 1939. 28 April. P. 104.
Labour Exchange and Trade Union Headquarters at Bordeaux, by Jaques d'Welles.

ARCHITECTURAL FORUM (NEW YORK). 1939. May.
The third number of the supplement "Plus." Ozenfant on "beautiful form—or do you like mushrooms? eggs? snails?" Beautiful art, he says, is made of forms for which we feel an instinctive need. Illustrations of the Sunila factory and community, Finland, by Alvar and Aino Aalto; and of Rebbio, a satellite town project, for industrial workers, by A. Sartoris and G. Terragni. Also an article by Moholy-Nagy on "Light, a new medium of expression."

L'ARCHITECTURE (PARIS). 1939. April. P. 119.
Article by R. Neutra on Regionalism in Architecture, illustrated with a large number of photographs of his own buildings.

DE 8 EN OPBOUW (AMSTERDAM). 1939. No. 6. P. 57.
Article on recent building in the U.S.S.R., by J. B. van Loghem, with illustrations of the Academy of Science and the Lenin Library at Moscow.

ARCHITETTURA (ROME). 1939. February. P. 67.
Very full review of the League of Nations buildings at Geneva.

CASABELLA (MILAN). 1939. No. 135. P. 4.
Excellent photographs of the Building Club premises at Stockholm, by Sven Markelius.

Obituaries

E. E. MOODEY [F.]

We regret to record the death on 10 April of Mr. Ernest Edward Moodey.

Mr. Moodey was born in 1873 and was articled and practised in Broadstairs. He received his training in the office of the old Local Government Board of Broadstairs and began to practise in 1901. In 1907 he took into partnership Mr. Douglas Chrisfield [L.], who succeeds him.

Mr. Moodey built Baptist churches at Broadstairs and Folkestone and was responsible for development of the Dumper Park estate and in the North Foreland districts. He also built a house at North Foreland for the late Lord Curzon.

JOHN THOMAS PENFOLD [A.]

We regret to record the death on 8 April of Mr. John Thomas Penfold. He entered, as a youth, the office of Messrs. Roumieu & Aitchison at 10 Lancaster Place, Strand, and remained in the same business ever since, except for the period of the War when he was in charge of piers and wharves at Salonica. For his services there he was mentioned in despatches and received an oak leaf to wear with his medal. He studied architecture at the Polytechnic School of Architecture, where in 1905 he won a gold medal, the "William Pinhey" Prize for design. After passing the examination he was elected an Associate in 1909.

After the death of Mr. Alfred Aitchison the business was continued by Mr. Reginald St. A. Roumieu, who later took in Mr. J. Fox Jones, F.S.I., to associate with him in the business, and about 1918 Mr. Penfold joined in. On the death of Mr. Roumieu the business was continued under the name of Fox Jones & Penfold at 13 John Street, Bedford Row, W.C.1, to which address it had removed in 1920 when Lancaster Place was demolished.

Mr. Penfold became increasingly responsible for architectural works carried out by this firm, including factory work for Messrs. Crosse & Blackwell, Ltd., the principal being Imperial Wharf, Nine Elms (now Watson House, the Gas Light & Coke Company). Private houses: Oxhey Place, near Watford; Tomtebo, Chipperfield; Pale Farm, Chipperfield; Wellesley Orchard, Broadstairs, and numerous smaller houses; restorations and addition to the Manor House, Chipperfield; Church Farm, Aldenham, etc. Parish halls or institutes: Oxhey Parish Hall, Bushey, Herts; Club House, Chipperfield, Herts; Harrow Weald Institute, Middlesex. Oxhey Golf Club House, Herts. Additions to Grosvenor Hospital, Westminster. New entrance lodge at the French Hospital, Hackney. Elevations only for the Metropolitan Electric Supply Co., Ltd., sub-station and offices, Windmill Lane, Southall; offices, Waterloo Road, Uxbridge; showrooms, High Street, Uxbridge; offices and showrooms at Greenford.

If Mr. Penfold had a difficult problem in planning he did not rest until he had solved it. He was liked by all and was equally courteous to clients, builders and workmen, as well as to merchants and their travellers. Mr. Penfold was born in 1877. He leaves a widow, a son and a daughter.

The practice is being continued by Mr. John Fox Jones at the same address.

G. A. FARRAR [A.]

We regret to record the recent death of Mr. George Arthur Farrar. He received his training in the office of Messrs. Abbey and Hanson, of Huddersfield, and afterwards worked in Manchester and Liverpool. For the last thirty years he worked in the Admiralty office at Rosyth, Scotland.

F. W. HIGGINBOTHAM [L.]

We have recently received notice of the death on 18 September 1938 of Mr. Frederick William Higginbotham. He was born in 1874, and received his training in the office of Mr. Robert Stirling and at the Dublin Metropolitan School of Art. Mr. Higginbotham began to practise in 1895, in Dublin, and took into partnership Mr. Arthur J. Stafford [L.], who will continue the practice at 3 Clare Street, Dublin.

He was a member of the Institution of Civil Engineers of Ireland, surveyor to the Howth and Vernon Estates, and engineer to the Howth U.D.C. Mr. Higginbotham's practice was a varied one. He built multi-storeyed garages, hotels, factories and private residences. He was an authority on valuation, estate development and marine surveys for coast erosion for the Quit Rent Office. He was a Justice of the Peace and a keen yachtsman.

WILLIAM MORTON [L.]

Mr. William Morton, who died on 19 April, received his training in the office of Mr. R. Castle & Son, Cleckheaton, Yorks, and subsequently practised there from 1908 to 1931, when he worked in the municipal architect's department at Newbury. For a year (1933-34) he worked in Romford, and then, until 1939, in the architectural department of the Oxford City Council.

Mr. Morton was honorary architect for a period to the Leeds Civic Theatre.

R. A. ROGERS [L.]

We record with regret the death on 1 April of Mr. Richard Alfred Rogers. He was born in 1868 and first worked as an assistant to the late Mr. Samuel Segar, of Newton Abbot.

Mr. Rogers was engineer and surveyor to the Newton Abbot Rural District Council from 1897 to 1924, when he started to practise on his own account.

Among the works for which he was responsible are the assembly hall, gymnasium and headmaster's house at Court Grange School, near Newton Abbot, for the National Institute of the Blind; a warehouse, garage and additions to the bakery and several new shops for the Newton Abbot Co-operative Society; the Passage House Inn, Kingsteignton, and a number of reconstructions of licensed premises for the Heavitree Brewery; and a number of country houses and alterations to them in the surrounding district. Mr. Rogers was keenly interested in archæology. His practice is being carried on by his son, Mr. R. Neville Rogers.

G. F. TURNER [L.]

Mr. George Frederic Turner, whose death on 25 April we regret to record, was educated at Harrow and at Exeter College, Oxford. He practised in London, where the greater part of his time was taken in his work for schools, including Westminster City School; Queen Anne's, Caversham; Greycoat Hospital; Sutton Valence; and Emmanuel, Wandsworth. Between the years 1907 and 1916 Mr. Turner published a number of novels which at the time had a ready sale.

At the moment, Mr. Turner's practice is being carried on by Mr. Laurence King [L.].

Correspondence

A.R.P. PUBLICATIONS

THE SCOPE OF THE TECTON BOOK

To the Editor, JOURNAL R.I.B.A.

SIR,—In making the annotated list of publications on A.R.P. published in the JOURNAL of 22 May, I had more in mind the practical needs of members who will have to carry out a national A.R.P. policy already partially in force, rather than a more theoretical study of the subject. I readily admit that I might at least have mentioned the theory which certainly occupies a large part of the book *Planned A.R.P.*, and can only plead that I was preoccupied with a search for immediately usable reference material.

The theory in question seeks not only to evaluate the relative risks of different types of shelter, but also to prove the superiority of the large collective shelter. In attempting the latter the book is clearly intended to be a justification of the Finsbury design. In both these aims I maintain that some unsound assumptions have been made, though, unfortunately, the points in question are abstruse and cannot all be discussed in a letter. One must suffice as an example. It is stated (page 40) that concentration of persons into one quarter of an area—instead of evenly distributing them over that area—will reduce their risk of being hit to one quarter. In fact, in random bombing, bombs do not fall evenly like rain (a misleading analogy used on page 24) but their points of impact are purely fortuitous. Dispersal will result in some casualties, but proportionately they can never be large. Concentration may result in no casualties from a raid, but it may result in their being very heavy indeed, seriously impairing the power and coherence of the mass, the preservation of which must be the primary aim of any Government involved in war. Assuming *reductio ad absurdum* the concentration of a population in one vast shelter would bring in the risk of total destruction—quite independently of the number of bombs dropped—a risk which is absent from a policy of dispersal. This I hold to be one example of an unsound basic assumption. Further, the theory advanced in this book also has that defect inherent in many theories, namely, of being far too general, a defect not lessened by the somewhat frequent use of loose phraseology—of which I could give several examples if space permitted. Therefore I felt that all reference to it were, on the whole, better omitted.

To my mind the authors exhibit some hardihood in claiming that their book does not “seek to prove the disadvantages of other types of shelter” in favour of the Finsbury design. The illustrations of the former are almost all of possible failures, while the risks of the latter (some of which could be

specified) are ignored. Indeed, they refer to other shelters (page 72) as “ill-considered and obviously impractical proposals,” while their own design is stated to be “bomb-proof,” which it demonstrably is not.

Finally, as no more than evidence of my good faith, I would say that a copy of the annotated list was sent to one of the authors before publication, inviting his comments. Unfortunately I did not know he was ill and that therefore he did not see it. Receiving no comment from him, I allowed the remarks on the book to be published as they stood.

Yours faithfully,

THE REVIEWER

DURHAM KEEP

i Cloisters,

Temple,

London, E.C.4

13.6.39

To the Editor, JOURNAL R.I.B.A.

SIR,—In Prior Laurence's description of the keep of Durham Castle he says that the wall—that is the curtain wall—rises up with the mound (*tumulo*) and still rising reaches to the arx. But, he continues, the arx again rises into thin air. Now the ancient wall still rises up the mound from its foot to the keep. Obviously the arx was where one would expect it to be, at the summit and not at the foot of the mound.

The precise epithet he would wish to use when referring to this building must be a matter for Mr. Honeyman's personal choice. Actually the shell stands upon the foundations and incorporates the walling and buttresses of a mediæval fortification, and, for reasons already given, probably dates from the Norman period.

Yours faithfully,

SIDNEY TOY

MR. STEVENS' LECTURE ON THE PARTHENON

Mr. Theodore Fyfe [F.] has sent us the following note from Mr. Gorham Phillips Stevens in reply to his letter in the “Journal” of 24 April.

In the lecture I did not have time to give all the available proofs about the grilles of the Pronaos and Opisthodomus of the Parthenon. There are some very important inscriptions dating from 434 B.C. referring to small valuable articles kept in the Pronaos and to money kept in the Opisthodomus. It is obvious that the Pronaos and Opisthodomus had to have grilles as early as 434 B.C.

Yours sincerely,

GORHAM PHILLIPS STEVENS [Hon. A.]

Notes

HONOURS LIST

Mr. B. J. Waterhouse [F.] and Mrs. F. M. Taylor [L.] have been given the O.B.E. in the Birthday Honours List.

MR. T. H. B. BURROUGH

Mr. T. H. B. Burrough [A.] has been elected an Associate Royal West of England Academy (A.R.W.A.).

A.R.P. IN THE MIDLANDS

Mr. Stanley J. Davies, A.M.I.C.E., of the Public Works Department, Dell Road, Cotteridge, Birmingham, 30, has

been appointed Hon. Secretary of the A.R.P. Regional Professional Advisory Committee (Shelters) for the Midlands area.

Any practising architects, or assistants (willing to work part time), who have not already sent in their names to the Birmingham and Five Counties Architectural Association should communicate direct with Mr. Davies if they desire to carry out work for local authorities in accordance with the scale of fees referred to in A.R.P. Memorandum 110/1939.

CENTRAL SCHOOL OF ARTS AND CRAFTS ANNUAL EXHIBITION

The work of the architectural students shown in the above exhibition is noticeable for its competency. The majority of the drawings shown are very clearly expressed, and have a workmanlike appearance. This is all the more surprising when it is realised that these students, some of them with not more than two or three years' experience, are engaged in offices during the day, and have to do all their architectural studies after working hours.

On a general survey of the work, it is clear that the school stands for a certain tradition in design, but this tradition is by no means hidebound, and is very far removed from what might be described as stylistic essays. The students are evidently taught to think out their problem for themselves, and this applies to the planning and construction as well as to the æsthetic presentation.

As might be expected, several students have broken away from this tradition, but where they have done so their work is characterised by a sweet reasonableness. It is interesting to note that all designs are for actual sites.

It is impossible in a short review like this to refer to each of the designs exhibited.

Mr. F. W. Cross has a design for a very modern and efficient looking fire station. The elevations are restrained, and the plan is well worked out both as regards the main disposition of the various sections as well as the details.

Mr. J. W. Grimes shows measured drawings of old Richmond Palace adapted for the purpose of a small local museum. It seems a thousand pities that it cannot be used for some such purpose.

He also has a design for a canon's house in the Close at Norwich, which would make a comfortable neighbour for the existing buildings.

Miss Pertwee has a design for a house in Knightsbridge worked out on late Georgian lines, delightfully presented with refined detail. The materials are stucco for the finish to the walls with a slated roof, the windows being enriched with some delicate wrought iron balconies. It is questionable whether both the design and the materials would not be more suitable to a house in a country town rather than in London.

Mr. S. R. Elgar shows a design for a town hall; this is well planned and carefully worked out. The elevations would have been better if they had been treated in a simpler manner. The brick panelling round the windows repeats a similar treatment to the three entrance doors, and the design would have gained by its omission.

Mr. J. E. Kelly also shows a design for a town hall, the elevation of which is somewhat more satisfactory than Mr. Elgar's, but certain details of planning, notably the secondary staircase and winders, would require revision.

One of the most interesting designs submitted is that of Mr. E. N. Cousens for the rebuilding of the Lyric Theatre. This is an amazing production for a student; the plans and sections show a thorough grasp of a very difficult problem. The elevations are interesting, but the sculptured figure indicated, though good of its kind, appears to be a little out of scale.

Mr. R. P. Gibson shows a design for a post office, the elevations of which are good, but would be improved if there was a little more interest in the doorways.

Mr. J. P. Harvey shows a design for a country public house. The plan has been well considered, and the elevations have the right domestic note.

Mr. M. A. Hunt's drawings for a post office scarcely do the design justice. His house in Cornwall is much more thoroughly worked out, but is to a certain extent marred by his printing.

Mr. L. H. Gooday's design for an outside staircase and fountain are shown by what is probably the best set of drawings in the exhibition.

Messrs. R. J. Double, A. R. Potter and R. Harvey have all chosen the same subject, namely, the house at Knightsbridge. Designs have been carefully worked out and well presented.

Mr. G. K. Patel has a well-planned sports pavilion with interesting elevations. This student came from the Bombay School only a year ago, but his design is quite English in character.

Miss Markbreiter shows a design for a house at Matlock in stone suitable for the district. The plan is sensible, and the various rooms well disposed. The elevation would have gained if the author had confined her bright colour to the entrance door, rather than using it as she has done for the less important entrances as well.

The Architectural Department of the Central School has always maintained a high standard of achievement, and this year's exhibition shows that there has been no falling off; though small in scope, it well repays a visit.

The exhibition is open from 10 a.m. to 8 p.m. until 30 June.
STANLEY C. RAMSAY [F.]

MUNICIPAL COLLEGE, DEPARTMENT OF ARCHITECTURE, SOUTHBEND-ON-SEA

A party of nearly forty past students of the above school held a reunion dinner in London on 26 May. Mr. A. B. Grayson [F.] presided and Mr. D. N. Martin-Kaye [F.] and Mr. Leonard Freeborn, M.B.E., were guests of honour.

Mr. D. N. Martin-Kaye, in replying to the toast of "The Guests," said that the occasion was a red-letter day which he would never forget. He expressed his pleasure at meeting old friends and students and said that he never ceased for a moment to feel conscious of his mission in training students for the profession and hoped that above all he had been able to impart to them at least an appreciation of the inner meaning of their art. A gathering of this kind was a great encouragement to himself and his colleague and also to present students.

Mr. Freeborn supported Mr. Martin-Kaye on the question of responsibility for the welfare of all students who passed through their hands.

CONGRESS OF SOUTH AFRICAN ARCHITECTS AND QUANTITY SURVEYORS



A photograph of some of the delegates and their wives at the recent Congress of South African Architects and Quantity Surveyors, which was held in Port Elizabeth last April. Those in the front row (from left to right) are Mr. Norman Eaton, Mr. R. Howden, Mr. R. Martienssen, Capt. L. A. Elsworth, Mr. R. J. C. Prentice (President-in-Chief, I.S.A.A.), Mr. D. S. Haddon, Mr. G. Howgrave-Graham, Mr. E. M. Powers, Mr. R. Day, Mr. T. Moore, Mr. B. St. C. Lightfoot, Mr. W. A. McKechnie, Mr. J. S. Cleland, and Mr. J. S. Lewis.

Membership Lists

ELECTION : 19 JUNE 1939

In accordance with the terms of Byelaws 10 and 11, the following candidates for membership were elected at the Council Meeting held on Monday, 19 June 1939.

AS FELLOWS (26)

ANDERTON : RICHARD [A. 1914], Blackpool.
 BLACK : KENNETH EASTY [A. 1923], Brighton.
 BREWILL : COLONEL LIONEL COLIN, T.D. [A. 1919], Nottingham.
 CAWKWELL : ROBERT [A. 1919], Sheffield.
 CRICKMAY : GEORGE HAYTER [A. 1924], Springs, Transvaal.
 EDLESTON : ERNEST HARCOURT [A. 1906], Nantwich.
 GREEN : CHRISTOPHER, M.A.(Oxon.) [A. 1926].
 LLOYD : WILLIAM ANTONY SAMPSON, M.A. [A. 1926].
 LUYKEN : HENRY MARTIN [A. 1916].
 MOBBS : SYDNEY WILFRID [A. 1909], Norwich.
 SADLER : WILLIAM [A. 1922].
 SELBY : ROBERT BARNEY JACK, A.A.Dip. [A. 1932].
 SKINNER : CEDRIC GEORGE [A. 1921], Bristol.
 SKINNER : THEODORE ARTHUR [A. 1920], Bristol.
 SOMERFORD : THOMAS RETFORD [A. 1912].
 SOPER : STANLEY GEORGE [A. 1915].
 SWAN : THOMAS AIKMAN [A. 1910], Edinburgh.
 TEMPLE : ERIC EDWARD [A. 1913], Ottawa.
 And the following Licentiates who have passed the qualifying Examination :—
 BENNETT : JOHN GARRETT, Gravesend.
 BOND : CLIFFORD, A.M.T.P.I., Chesterfield.
 GRIFFITHS : GORDON HERBERT, A.M.T.P.I., Cardiff.
 JACKSON : LEONARD GEORGE, Nairobi.
 MILNER : SIR WILLIAM F. V. M., M.A.(Oxon.), F.S.A., Skipton.
 ROSS : HERBERT REGINALD.
 TROWER : THOMAS FRANCIS, Spalding.
 WAPSHOTT : FRANCIS ELLIS, F.S.I., Maidenhead.

AS ASSOCIATES (25)

BEARDSHAW : JOHN EDWARD [Passed five years' course at the School of Architecture, Victoria University, Manchester. Exempted from Final Examination].
 BEATON : JOHN RONALD, Dip.Arch.Abdn. [Passed five years' course at the Aberdeen School of Architecture, Robert Gordon's Technical College. Exempted from Final Examination], Glasgow.
 DARROLL : WILLIAM WALTER, Dip.Arch. [Passed a qualifying Examination approved by the Institute of South African Architects], Cape Town.
 FOYLE : ARTHUR MONTAGUE [Passed five years' course at the Bartlett School of Architecture, University of London. Exempted from Final Examination].
 GRANT : MAJOR HORACE HENRY [Passed a qualifying Examination approved by the Institute of South African Architects], Durban.
 HARTNELL-BEAVIS : FRANCIS JOHN [Passed five years' course at the Architectural Association. Exempted from Final Examination].
 HORWOOD : ROBERT FREDERICK, B.Arch. [Passed five years' course at the Liverpool School of Architecture, University of Liverpool. Exempted from Final Examination], St. John's, Newfoundland.
 HUNTER : ARNOLD MCKENZIE, Dip.Arch.Edin. [Passed five years' course at the School of Architecture, Edinburgh College of Art. Exempted from Final Examination].
 LEWIS : PETER HUMPHREY [Passed five years' course at the Architectural Association. Exempted from Final Examination].
 LININGTON : WILLIAM HENRY ARTHUR [Passed a qualifying Examination approved by the Institute of South African Architects], Newlands, Cape, S. Africa.
 MCGOWAN : HAROLD DUDLEY SHIRLEY [Passed five years' course at the School of Architecture, University College, Auckland,

New Zealand. Exempted from Final Examination], Auckland.

MAIR : JOHN LINDSAY, B.Arch.N.Z. [Passed five years' course at the School of Architecture, University College, Auckland, New Zealand. Exempted from Final Examination], Wellington.
 MAITRA : MONO MOHAN [Special Final Examination], Calcutta.
 MARK : HUGH STEWART [Passed five years' course at the Glasgow School of Architecture. Exempted from Final Examination], Ayr.
 MARTIN : JOHN EDWARD [Passed five years' course at the Aberdeen School of Architecture, Robert Gordon's Technical College. Exempted from Final Examination], Aberdeen.
 OWEN : DAVID BRASIL, Dip.Arch.Cardiff [Passed five years' course at the Welsh School of Architecture, The Technical College, Cardiff. Exempted from Final Examination], Newport, Mon.
 PICKUP : GEOFFREY, Dip.Arch., Dip.T.P.(Mancr.) [Passed five years' course at the School of Architecture, Victoria University, Manchester. Exempted from Final Examination], Sheffield.
 RENNIE : GRAEME WELSH [Passed a qualifying Examination approved by the Institute of South African Architects], Cape Town.
 SCOTT : THOMAS KAY, Dip.Arch.Manchester [Passed five years' course at the School of Architecture, Victoria University, Manchester. Exempted from Final Examination], Oldham.
 SIMPSON : WILLIAM ROBERT [Passed five years' course at the School of Architecture, University College, Auckland, New Zealand. Exempted from Final Examination], Auckland.
 TEW : ERNEST FREDERICK [Passed five years' course at Glasgow School of Architecture. Exempted from Final Examination], Blackburn.
 THORNTON : PETER MUSCHAMP [Passed five years' course at the Architectural Association. Exempted from Final Examination], Vancouver.
 TOMALIN : ROGER RIDLEY [Passed five years' course at the Architectural Association. Exempted from Final Examination].
 TOMLINSON : JACK, Dip.Arch.L'pool [Passed five years' course at the Liverpool School of Architecture, University of Liverpool. Exempted from Final Examination].
 WILLIAMS : FRANCIS CLIFTON [Passed five years' course at the School of Architecture, Victoria University, Manchester. Exempted from Final Examination], Southport.

AS LICENTIATES (5)

GRAY : ALEXANDER STUART.
 HARVEY : DUNCAN.
 HENZELL-ASCROFT : FREDRIC NORMAN WHALLEY.
 HIVES : ERIC GEORGE VINAN, Reading.
 PALMER : ELIAS WILLIAM.

ELECTION : 10 JULY 1939

In accordance with the terms of Byelaws 10 and 11, an election of candidates for membership will take place at the Council Meeting to be held on Monday, 10 July 1939. The names and addresses of the candidates, with the names of their proposers, found by the Council to be eligible and qualified in accordance with the Charter and Byelaws are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary R.I.B.A. not later than Thursday, 6 July 1939.

AS FELLOWS (21)

ATTLEE : THOMAS SIMONS, M.A.(Oxon.) [A. 1907], Leory Croft, Perranarworthal, Truro. Proposed by Philip J. Turner, Henry Hyams and Regd. F. Wheatly.
 BATES : CYRIL FRANCIS [A. 1919], Tredegar Chambers, 78 Bridge Street, Newport, Mon.; Fishbourne, Chepstow Road, Bishopool, Newport. Proposed by Lt.-Col. E. H. Fawckner, Colin L. Jones and Chas. F. Ward.

BRYAN: ARTHUR FRANCIS [A. 1910], 8 New Street, Leicester; 47 Westfield Road, Leicester. Proposed by William Keay, George Nott and E. J. Williams.

CARR: TERENCE [A. 1929], "Garthowen," Hockering Gardens, Woking, Surrey. Proposed by Norman Keep, J. H. Forshaw and Professor Patrick Abercrombie.

EBERLIN: ALBERT EDGAR, M.C. [A. 1921], 3 College Street, Nottingham; 26 Magdala Road, Nottingham. Proposed by T. Cecil Howitt, W. G. Watkins and Cyril F. W. Haseldine.

JONES: WILLIAM HAROLD [A. 1920], 17 Victoria Street, Westminster, S.W.1; "Gladwyn's Farm House," Totteridge, Herts. Proposed by F. Lindus Forge, W. Chas. Waymouth and H. Yolland Boreham.

And the following Licentiate who have passed the qualifying Examination:—

BLUNT: HARRY ARTHUR, 9 Great Charles Street, Birmingham, 1; "Karibu," King Charles Road, Quinton, Worcestershire. Proposed by John B. Surman, William T. Benslyn and Edwin F. Reynolds.

BULLIVANT: LINDSAY FRANK, 156 Bristol Road, Edgbaston, Birmingham. Proposed by John B. Surman, William T. Benslyn and W. Alexander Harvey.

FOX: HENRY LESLIE, Surgery Drive, Church Street, Oswestry; 1A The Cross, Oswestry. Proposed by Herbert Thearle, Professor Lionel B. Budden and F. X. Velarde.

HAINE: PERCIVAL WALTER, 254-260 Earls Court Road, S.W.5; 31 Josephine Avenue, S.W.2. Proposed by A. Edward Hughes, Kenneth M. Winch and W. E. Masters.

HICKSON: HARRY ARMITAGE, 51 Hall Gate, Doncaster; "Three Elms," Cautley Lane, Doncaster. Proposed by Clifford Hickson, Norman Culley and Morris Thompson.

HUSON: WILLIAM, 322 Leeds Road, Newton Hill, near Wakefield. Proposed by Victor Bain, James R. Adamson and William Scott.

JONES: RICHARD WILLIAM HERBERT, 46 Grosvenor Gardens, S.W.1; 3 Park Avenue, Finchley, N.3. Proposed by E. B. Musman, Kenneth M. Winch and H. Douglas Kidd.

WATERHOUSE: BENJAMIN, 134 Deansgate, Manchester; Stand Lodge, Bramhall, Cheshire. Proposed by John Swarbrick, Francis Jones and Professor R. A. Cordingley.

YOUNG: GRAHAM CONACHER, 42 Tay Street, Perth; Union Mount, Perth. Proposed by D. A. Stewart, R. Matthew Mitchell and W. Erskine Thomson.

And the following Licentiate who are qualified under Section IV, clause 4 (c) (2) of the Supplemental Charter 1925:—

BURDWOOD: STANLEY HARRY, 10 New Burlington Street, W.1; 114 Hallam Street, Portland Place, W.1. Proposed by E. J. W. Hider, Robert Cromie and F. G. M. Chancellor.

COBB: THOMAS KEIGHTLEY, Education Architect's Office, 46 Hazelwood Road, Northampton; 70 Derngate, Northampton. Proposed by F. H. Allen, G. H. Lewin and Walter Rosser.

COOPER: HERBERT FRANCIS THOMAS, County Hall, S.E.1; The Two Gables, Box Ridge Avenue, Purley, Surrey. Proposed by E. P. Wheeler, Fredk. R. Hiorns and W. E. Brooks.

PRITLOVE: SAMUEL BERTRAM, 37 Great Pulteney Street, W.1; 14 Berwyn Road, Richmond, Surrey. Proposed by Norman Keep, M. N. Castello and Samuel Beverley.

SCHOFIELD: RICHARD WILLIAM, c/o Messrs. W. B. Starr & Hall, 12 Victoria Street, Nottingham; 56 Musters Road, West Bridgford, Nottingham. Proposed by T. Cecil Howitt, Claude E. Howitt and Major Charles H. Calvert.

SHAW: JAMES EDWARD, 6 Market Street, Newcastle-upon-Tyne, 1; 13 Boundary Gardens, High Heaton, Newcastle-upon-Tyne. Proposed by F. M. Dryden, R. Burns Dick and H. L. Hicks.

AS ASSOCIATES (12)

BARON: DONALD KENNETH, M.A., A.M.T.P.I., Dip.T.P. [Passed five years' course at the School of Architecture, Victoria University, Manchester. Exempted from Final Examination], 57 Redesdale Gardens, Lawnswood, Leeds, 6. Proposed by Professor R. A. Cordingley, C. Gustave Agate and W. Harding Thompson.

GREENWOOD: SAVILE, B.Arch. [Passed five years' course at the Liverpool School of Architecture, University of Liverpool. S. P. Bush and applying for nomination by the Council under the provisions of Byelaw 3 (d). Exempted from Final Examination], 1 Regent Park Avenue, Hyde Park, Leeds, 6. Proposed by Professor Lionel B. Budden, Edward R. F. Cole and J. Ernest Marshall.

HYDE: CHARLES HENRY [Passed five years' course at the Birmingham School of Architecture. Exempted from Final Examination], 156 Yardley Wood Road, Moseley, Birmingham, 13. Proposed by T. Cecil Howitt, George Drysdale and John B. Surman.

JONES: IVOR NORMAN, Dip.Arch.(Cardiff) [Passed five years' course at Welsh School of Architecture, The Technical College, Cardiff. Exempted from Final Examination], 5 Axminster Road, Roath, Cardiff. Proposed by Colin L. Jones, Arthur G. Lynham and Lt.-Col. E. H. Fawckner.

LAKE: HERBERT JOHN [Passed five years' course at the Liverpool School of Architecture, University of Liverpool. Exempted from Final Examination], 11A Llwynygrant Terrace, Penylan, Cardiff. Proposed by Professor Lionel B. Budden, Edward R. F. Cole and Percy Thomas.

LINDSAY: WALTON HOLMES [Passed five years' joint course at the School of Architecture, King's College (University of Durham), Newcastle-upon-Tyne, and the Bartlett School of Architecture, University of London. Exempted from Final Examination], 8 Mayfield Road, Wallasey, Cheshire. Proposed by Professor A. E. Richardson, H. O. Corfiato and L. Stuart Stanley.

LONGDIN: CHARLES EDWARD [Final], 30 Claremont Avenue, Sunbury-on-Thames, Middlesex. Proposed by J. H. Forshaw, J. A. Dempster, and Edwin Williams.

MAYNARD: BRIAN CHARLES [Passed five years' course at the Bartlett School of Architecture, University of London. Exempted from Final Examination], Ballochmorrie, Bramley Avenue, Coulsdon, Surrey. Proposed by L. Stuart Stanley, H. Lidbetter and H. O. Corfiato.

MYTTON: JOHN [Passed five years' course at the Birmingham School of Architecture. Exempted from Final Examination], 44 Lea Road, Wolverhampton, Staffs. Proposed by George Drysdale, John B. Surman and Cecil E. M. Fillmore.

RHODES: GREVILLE STUART [Passed five years' course at the Architectural Association. Exempted from Final Examination], 30 Percy Street, W.1. Proposed by R. Furneaux Jordan, E. Maxwell Fry and L. H. Bucknell.

SLATER: MISS KATHARINE PAMELA [Passed five years' course at the Architectural Association. Exempted from Final Examination], 8 Wellgarth Road, N.W.11. Proposed by A. H. Moberly, J. Alan Slater and Geoffrey C. Wilson.

WESTON: MISS ROSALEEN NANCY WILSON, Dip.Arch.Leds. [Passed five years' course at the Leeds School of Architecture. Exempted from Final Examination], 121 St. George's Square, Victoria, S.W.1. Proposed by Wm. Broadbent, W. E. Brooks and Edwin Williams.

AS LICENTIATES (17)

BATTEN: GEORGE, 17 Blagrove Street, Reading; 27 Oxford Road, Reading. Proposed by W. Roland Howell, T. Talfourd Cumming and Eric Steward Smith.

BOND: LAWRENCE HENRY, 11 Elmer Street, Grantham, Lincs.; "The Pingle," Great Gonerby, Grantham. Proposed by W. G. Watkins, L. W. Barnard and A. Ernest Heazell.

BOSTOCK : HERBERT STANLEY, Broadway Buildings, 6 South Road, Southall, Middlesex ; "Norwood," Elms Lea Avenue, Withdean, Brighton. Applying for nomination by the Council under the provisions of Byelaw 3 (d).

BRANNEN : EDWARD WILFRED M.M., Carnegie Buildings, Dornoch, Sutherland ; St. Andrews, Dornoch. Applying for nomination by the Council under the provisions of Byelaw 3 (d).

DAY : FREDERICK GEORGE, Borough Engineer's Department, Acton Borough Council, 21 Tennyson Avenue, Twickenham, Middlesex. Proposed by Robert Atkinson, A. F. B. Anderson and G. Grey Wornum.

GAMMANS : REGINALD ADOLPHUS NOWELL, Gresham House, 54 High Street, Shoreham-by-Sea ; 347 Upper Shoreham Road, Shoreham-by-Sea. Proposed by Sidney T. Hennell and applying for nomination by the Council under the provisions of Byelaw 3 (d).

HOLLINS : WILLIAM EDWARD, Broadway Buildings, 6 South Road, Southall, Middlesex ; 290 Norwood Road, Norwood Green, Southall. Applying for nomination by the Council under the provisions of Byelaw 3 (d).

JAMES : FREDERICK WILLIAM, Council Offices, Narborough, Leicestershire ; Nyewood House, Narborough. Proposed by Clement Stretton, Frank H. Jones and the President and Hon. Secretary of the Leicester and Leicestershire Society of Architects under the provisions of Byelaw 3 (a).

MILLER : ALBERT ERNEST, Architects' Department, London County Council, County Hall, S.E.1 ; 135 Covington Way, Norbury, S.W.16. Proposed by Fredk. R. Hiorns, E. G. Bax and Edwin Williams.

MOORE : ERNEST CLIFFORD, 32A Sheen Street, Wellingborough ; Barclays Buildings, High Street, Leicester ; 20 West Avenue, Leicester. Proposed by W. E. Moore, J. Stockdale Harrison and Arthur H. Hind.

MURAS : ALBERT QUIN, 21 Ridley Place, Newcastle-upon-Tyne, 1 ; 17 Amberley Gardens, Heaton, Newcastle-upon-Tyne, 6. Proposed by the late Harold Oswald, F. N. Wightman and the President and Hon. Secretary of the Northern Architectural Association under the provisions of Byelaw 3 (a).

PESTER : GEORGE SAMUEL, Architect's Department, Middlesex County Council, 40 Mayow Road, Sydenham, S.E.26. Proposed by W. T. Curtis, T. Frank Hawkes and G. L. Desmond Hall.

RANSOM : STANLEY FREDERICK, Architect's Department, Metropolitan Railway Surplus Lands Co., Ltd., Baker Street Station, N.W.1 ; "Wymondham," 30 Parkthorne Drive, North Harrow, Middlesex. Applying for nomination by the Council under the provisions of Byelaw 3 (d).

ROBERTS : ARTHUR HENRY, "Beechens," Bessels Green, Sevenoaks, Kent. Proposed by George Coles, G. J. Buckingham and Ashley F. Benjamin.

SEARLEY : FRANK JOHN, Q.M.G. 10, War Office ; 318 Woodgrange Drive, Thorpe Bay, Essex. Proposed by Wm. A. Ross, Lt.-Col. P. A. Hopkins and applying for nomination by the Council under the provisions of Byelaw 3 (d).

STOCK : BERNARD HENRY, 8 Bush Hill Road, N.21 ; 45 Ashurst Road, N. Finchley, N.12. Proposed by Walter E. Cross, R. S. Bowers and applying for nomination by the Council under the provisions of Byelaw 3 (d).

WALLACE : ROBERT, c/o Messrs. C. Davidson & Son, 27 High Street, Paisley ; 10 Craigpark Drive, Glasgow, E.1. Proposed by Robert Miller, Eric A. Sutherland and T. G. Gilmour.

ELECTION : 23 OCTOBER 1939

In accordance with the terms of Byelaws 10 and 11, an election of candidates for membership will take place at the Council Meeting to be held on Monday, 23 October 1939. The names and addresses of the overseas candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary R.I.B.A. not later than Monday, 18 September 1939.

AS FELLOWS (4)

DAVIES : IDRIS [A. 1921], Government Road, Nairobi, Kenya ; Upper Hill Estate, Nairobi. Proposed by Harold E. Henderson, H. L. Geeson and C. Rand Overy.

HAWKINS : FREDERICK GEORGE BRUDENELL-BRUCE [A. 1910], Mercantile Mutual Buildings, 179 St. George's Terrace, Perth, Western Australia ; "Woodend," Darlington, Western Australia. Proposed by Herbert A. Welch, Felix J. Lander and Sydney Tatchell.

HODGES : ALFRED WALTER [A. 1924], Public Works Department, Hong Kong. Proposed by W. A. Cornell, R. J. B. Clark and Capt. C. Christie A. Hobbs.

THAN : ON [A. 1913], Public Works Department, Government of Burma, Promote Court, Promote Road, Rangoon. Proposed by

AS ASSOCIATES (4)

BILLIMORIA : HORMUSJI JAMSHEDJI [Final], Lentin Chambers, Dalal Street, Fort, Bombay. Proposed by C. M. Master, Burjor S. J. Aga and T. S. Gregson.

KARANJGAOKAR : DATTATRAYA GANGADHAR [Final], c/o Messrs. Master, Sathe & Bhuta, 34-38 Hamam Street, Fort, Bombay. Proposed by C. M. Master, Burjor S. J. Aga and D. W. Ditchburn.

SARMA : RAJAMANI RAMNAREYAN [Final], Messrs. Gregson, Batley and King, Fort, Bombay. Proposed by H. Foster King, T. S. Gregson and E. C. Henriques.

WELBOURN : ALAN EGERTON [Passed a qualifying Examination approved by the Royal Australian Institute of Architects], 16 Peroomba Avenue, Kensington Gardens, Adelaide, South Australia. Proposed by L. Laybourne-Smith, Guy St. J. Makin and Philip R. Claridge.

R.I.B.A. PROBATIONERS

The following were enrolled as Probationers of the Royal Institute during the month of May 1939 :—

Alderson, Frederick, *Easington, Co. Durham*. Anderson, John Boyd, *King's Lynn*. Arnold, Harold Godwin, *Southampton*. Blackmore, Stanley William, *London*. Blowes, Herbert Douglas, *Buckhurst Hill*. Bunker, Lawrence Harry, *London*. Burnett, Eric George Sangster, *Aberdeen*. Clews, Arnold Percy, *Manchester*. Corney, Peter Beldam, *Derby*. Cottenham-Church, Harold Arthur Patrick, *London*. Cowley, Kenneth, *Hornchurch*. Craig, Cameron Nares, *Hindhead, Surrey*. Davies, Ronald, *Brynteg, near Wrexham*. Davies, Ronald Merlin, *Swansea*. Davis, Alfred John Valentine, *Birmingham*. Day, Alexander Charles, *Sidcup, Kent*. Dimond, James Francis, *Plymouth*. Drummond, Robert Leonard, *Isle of Wight*. Felce, David Gilbert, *Northwood, Middlesex*. Fisk, James Waring, *Edinburgh*. Foxwell-Edwards, Frederick Aubrey, *London*. Francis, Douglas John, *Chelmsford*. Galpine, John Austin, *York*. Galwey, Reginald Hugo de Burgh, *Cambridge*. Gleaves, Ronald William, *London*. Goodhew, Philip Arthur, *London*. Gowland, Henry, *Newcastle-on-Tyne*. Hancock, Gordon Albert Lewis, *Greenhithe, Kent*. Harding, Henry Charles Williams, *London*. Harris, Alan Hugh, *London*. Hartley, Ronald, *Manchester*. Heal, Philip Alfred Clifford, *Totnes, S. Devon*. Hill, Geoffrey Rowland, *Stockport*. Holt, Ronald Norman Parks, *Union Mills, Isle of Man*. Hutchison, Julian Jervis Oliphant, *Edinburgh*. Jackson, Stuart William, *Bournemouth*. Jarrett, Maurice Charles, *Coventry*. Jones, John Ellis, *Llanwrchylltyl, Merionethshire*. Kinch, Vernon Gilbert, *Cardiff*. Kingston, Norman David, *Chesterfield*. Kirby, Clifford Ramsey, *Darlington*. Knapp, Richard Edwin, *Coventry*. Latheron, Kenneth, *Spennymoor, Co. Durham*. Little, John Malcolm, *Wallingford*. Littler, John Edward Tudor, *Prestatyn*. Lomax, Ronald Bennett, *March, Cambs*. McCrae, Alan, *Sidcup, Kent*. Mann, William George, *Leominster*. Martin, Reginald Gordon, *Hailsham, Sussex*. Mellor, Raymond Walter, *Blackpool*. Mills, Kenneth Sydney, *Ilford, Essex*. Morgan, Kenneth Angus, *Eastbourne*. Neave, Raymond Frank, *London*. Nicholls, William Edward, *Lancaster*. Parkes, Alan, *Liverpool*. Partridge, Granville William, *Redhill*. Pearson, Lorna Cruden, *Manchester*. Pellowe, Jack Leslie Trevelyan, *Llandudno*. Piercy, Ralph Clement, *Mill Hill*.

Potter, Geoffrey, *Worcester*. Pullen, Leslie Robert, *London*. Rainey, John Falconer, *Portrush*. Reid, Duncan, *Bolton*. Rowe, William Victor, *Westcliff-on-Sea*. Rumsey, Margaret, *Banstead*. Sibthorp, James Howard, *Hornchurch*. Sinclair, Kenneth Stanley Innes, *London*. Sproson, Frank, *Congleton, Ches.* Suthar, Balashankar Tuljoram, *Bombay*. Sutherland, John, *Wick*. Taylor, John Ernest, *Jersey*. Thicke, Rodney Charles Ellison, *Hastings*. Tribich, Abraham Maurice, *London*. Vinycomb, Noel Thorpe, *London*. Walker, Leslie, *Torquay*. Warren, James Herbert, *Bury St. Edmunds*. Watson, Alexander Scott Addison, *Glasgow*. Westrope, Frederick Henry, *Preston*. Wheeldon, Roy, *Hull*. Whittle, John Parkinson, *Blackburn*. Williams, Desmond Idris, *Colwyn Bay*. Williamson, William Henry, *Newcastle-on-Tyne*.

Notices

ROME SCHOLARSHIP IN ARCHITECTURE EXHIBITION OF FINAL COMPETITION DESIGNS

The designs submitted in the Final Competition for the Rome Scholarship in Architecture will be on exhibition at the Royal Institute of British Architects, 66 Portland Place, London, W.1, between the hours of 10 a.m. and 8 p.m. (Saturday, 10 a.m. and 5 p.m.) from 20 to 28 July 1939.

The Scholarship is provided by the Royal Institute of British Architects, which makes a grant of £750 a year to the British School at Rome. It is awarded by the Faculty of Architecture of the British School at Rome, and is keenly contested annually by the most brilliant students in the country. The scholar is required to go to Rome to study for a period of two or three years at the British School at Rome.

This year the subject for the competition was "A National Aeronautical Club." Fourteen students, from the following Schools, were admitted to the Competition:

- The School of Architecture, Edinburgh College of Art.
- The Leeds School of Architecture, Leeds College of Art.
- The Liverpool School of Architecture, University of Liverpool.
- The School of Architecture, The Architectural Association, London.
- The Bartlett School of Architecture, University of London.
- The School of Architecture, The Victoria University, Manchester.
- The School of Architecture, King's College, University of Durham, Newcastle-upon-Tyne.
- The School of Architecture, The Polytechnic, Regent Street, London.

THE R.I.B.A. KALENDAR 1939-1940

The attention of members is drawn to the leaflet enclosed with the issue of the JOURNAL for 22 May 1939. Changes of address, etc., for inclusion in the forthcoming issue of the Kalendar must be notified to the Secretary R.I.B.A. BEFORE SATURDAY, 1 JULY.

DRAFT FORM OF AGREEMENT BETWEEN A LOCAL AUTHORITY AND A FIRM OF ARCHITECTS

In view of recent changes in legislation and the revision in 1933 of the Scale of Professional Charges, the Council, on the recommendation of the Practice Committee, have revised the Draft Form of Agreement between a Local Authority and a firm of architects first issued in 1931.

The revised Draft is a short form embodying by reference the Scale of Professional Charges and the Conditions of

Engagement which are part of the Scale, and has been arranged with alternative clauses to apply either in cases in which the appointment is the result of a competition or in cases in which the appointment is not the result of a competition.

Copies of the revised Draft Form of Agreement may be obtained upon application to the Secretary R.I.B.A.

LICENTIATES AND THE FELLOWSHIP

By a resolution of the Council passed on 4 April 1938, on and after 1 January 1939 all candidates whose work is approved will be required to sit for the examination, which will be the design portion of the Special Final Examination, and no candidates will be exempted from the examination.

NOTE.—The above resolution will not affect Licentiates of over 60 years of age applying under Section IV, Clause 4 (c) (ii) of the Supplemental Charter of 1925.

ASSOCIATES AND THE FELLOWSHIP

Associates who are eligible and desirous of transferring to the Fellowship are reminded that if they wish to take advantage of the election to take place on 23 October 1939 (overseas candidates 6 November) they should send the necessary nomination forms to the Secretary R.I.B.A. not later than Saturday, 1 July 1939.

Competitions

The Council and Competitions Committee wish to remind members and members of Allied Societies that it is their duty to refuse to take part in competitions unless the conditions are in conformity with the R.I.B.A. Regulations for the Conduct of Architectural Competitions and have been approved by the Institute.

While, in the case of small limited private competitions, modifications of the R.I.B.A. Regulations may be approved, it is the duty of members who are asked to take part in a limited competition to notify the Secretary of the R.I.B.A. immediately, submitting particulars of the competition. This requirement now forms part of the Code of Professional Practice in which it is ruled that a formal invitation to two or more architects to prepare designs in competition for the same project is deemed a limited competition.

COMPETITION FOR ALTERATIONS TO CWM WORKING MEN'S CLUB AND INSTITUTE, CWM, MON.

Information has now been received from the Secretary of the Cwm Working Men's Club and Institute that the proposed competition for the alterations to the Club has been abandoned.

AUCKLAND, NEW ZEALAND: NEW CATHEDRAL

The General Trust Board of the Diocese of Auckland invite members of the New Zealand Institute of Architects resident in New Zealand or overseas to submit in competition designs for a new Cathedral.

Assessor: Sir Giles Gilbert Scott, R.A. [F.].

Premiums: £1,000, £400, £200 and £100.

Last day for submitting designs: 15 November 1939.

Last day for questions: 31 May 1939.

Conditions of the competition may be obtained on application to (a) The General Trust Board, P.O. Box 652, Auckland, New Zealand, or (b) The Secretary R.I.B.A., 66 Portland Place, London, W.1. Deposit £1 is.

DUDLEY: NEW MIXED SENIOR SCHOOL

The County Borough of Dudley Education Committee invite architects with offices in Warwickshire, Worcestershire, Herefordshire, Shropshire and Staffordshire to submit in competition designs for a new mixed senior school to be erected on a site at Halesowen Road, Netherton.

Assessor: Mr. S. N. Cooke [F.].

Premiums: £150, £100 and £50.

Last day for submitting designs: 31 August 1939.

Last day for questions: 30 June 1939.

Conditions of the competition may be obtained on application to the Director of Education, Education Offices, St. James's Road, Dudley. Deposit £1 1s.

EDINBURGH: NEW EXHIBITION HALL

The Lord Provost, Magistrates and Council of the City of Edinburgh invite architects in association with consulting engineers, both resident in Great Britain, to submit in competition designs for an Exhibition Hall, to be erected on the site of the present Waverley Market, Princes Street, Edinburgh.

Assessor: Mr. Thomas S. Tait [F.].

Premiums: 500 guineas, 300 guineas and 200 guineas.

Last day for submitting designs: 31 August 1939.

Last day for questions: 15 February 1939.

HUTTON, NEAR PRESTON, LANCs: NEW POLICE HEADQUARTERS

The Lancashire Standing Joint Committee for Police and other purposes invite Chartered and/or Registered architects to submit in competition designs for a new General Police Headquarters and Training School to be erected at Hutton, near Preston.

Assessor: Sir Percy Worthington, Litt.D., F.S.A. [F.].

Premiums: £500, £400 and £300.

The last day for submitting designs has been extended to 1 August 1939.

Last day for questions: 28 January 1939.

LAGOS, NIGERIA: NEW SUPREME COURT HOUSE

The Government of Nigeria invite architects of British nationality and resident in Great Britain and Africa who are members of the R.I.B.A. or of its Allied Societies to submit in competition designs for new Supreme Courts in Lagos, Nigeria.

Assessor: Mr. A. F. B. Anderson [F.].

Premiums: £500, £300 and £200.

Last day for submitting designs: 30 June 1939.

Last day for questions: 14 February 1939.

MARGATE: NEW CIVIC CENTRE

The Corporation of the Borough of Margate invite architects of British nationality who are members of the R.I.B.A. or its Allied Societies to submit in competition designs for a new Civic Centre to be erected on a site overlooking Hartsdown Park, Margate.

Assessor: Mr. A. F. B. Anderson [F.].

Premiums: £500, £300 and £200.

Last day for submitting designs: 31 August 1939.

Last day for questions: 31 March, 1939.

OLDHAM: NEW ELECTRICITY OFFICES

The Corporation of the County Borough of Oldham invite registered architects to submit in competition designs for new Offices and Departmental Buildings for the Electricity Department to be erected on a site in Union Street.

Assessor: Professor R. A. Cordingley [F.].

Premiums: £400, £250 and £100.

Last day for submitting designs: 4 October 1939.

Last day for questions: 5 June 1939.

Conditions of the competition may be obtained on application to Mr. F. L. Ogden, Borough Electrical Engineer, Greenhill Offices, Oldham. Deposit £2 2s.

WATFORD: NEW FIRE STATION

The Corporation of the Borough of Watford invite architects of British nationality to submit in competition designs for a new Fire Station.

Assessor: Mr. E. Maxwell Fry [F.].

Premiums: £150 and £75.

Last day for submitting designs: 31 August 1939.

Last day for questions: 14 July 1939.

Conditions of the competition may be obtained on application to The Town Clerk, Municipal Offices, Watford. Deposit £1 1s.

COMPETITION RESULT**DUDLEY: MARKET HALL**

(Limited Competition)

1. Messrs. A. T. and Bertram Butler [F./A.A.].
2. Messrs. Harvey and Wicks [F.F.] (Birmingham).
3. Messrs. Martin & Martin and W. H. Ward [F./A.].

MEMBERS' COLUMN

Owing to limitation of space, notices in this column are restricted to changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and appointments vacant. Members are reminded that a column in the Advertisement Section of the Journal is reserved for the advertisements of members seeking appointments in architects' offices. No charge is made for such insertions and the privilege is confined to members who are definitely unemployed.

PRACTICE FOR SALE

ARCHITECT's old-established practice, in Leeds, for sale; principal could remain temporarily as partner.—Reply Box 1959, c/o Secretary R.I.B.A.

PROFESSIONAL ANNOUNCEMENT

MR. ROBERT W. PATERSON [A.] gives notice that since March 1939 he has been in private practice on his own account and in his own name solely at Royal Chambers, 45a The Promenade, Cheltenham, Glos. Tel. No. 4197.

OFFICE ACCOMMODATION WANTED

ASSOCIATE wishes to rent room (unfurnished if possible) in other member's office, W.C. and W. districts, sharing telephone, secretarial services, etc.—Write G. M. Kingsford, 115 Moorgate, E.C.2.

OFFICE ACCOMMODATION TO LET

TO LET in West End, second-floor office, consisting of two rooms, 15 ft. by 9 ft. and 15 ft. by 13 ft.; moderate rental, short lease can be arranged.—Reply Box 1369, c/o Secretary R.I.B.A.

OFFICE to let in South-West District. £17 10s. per quarter, or with use of clerk, telephone, etc., approximately £27 per quarter, furnished if required.—Reply Box 1359, c/o Secretary R.I.B.A.

CHANGE OF ADDRESS

MR. JOHN E. YERBURY [F.] has moved to Newland Cottage, 19 Esher Avenue, Walton-on-Thames, Surrey.

TEMPORARY CHANGE OF ADDRESS

MR. ARNOLD SILCOCK [F.] left England in the middle of May, and his address this summer till further notice is The British School of Archaeology, Athens.

MINUTES XIV

SESSION 1938-1939

At the twelfth general meeting of the Session 1938-1939, held on Monday, 19 June 1939, at 8 p.m.

Mr. H. S. Goodhart-Rendel, President, in the chair.

The meeting was attended by about 95 members.

The minutes of the one hundred and fifth annual general meeting, held on 8 May 1939, having been published in the JOURNAL, were taken as read, confirmed and signed as correct.

The Hon. Secretary announced the decease of:—

Edwin John Tanner, elected Associate 1911, Fellow 1922.

Sir George Washington Browne, R.S.A., LL.D. Edin., Hon.R.A., elected Fellow 1926, transferred to Retired Fellowship 1934. Sir George Washington Browne was Pugin Student for 1878.

George Alexander Beech, elected Associate 1924.

William Brandreth Savidge, elected Associate 1890, transferred to Retired Associateship 1933.

Alexander Brown Wilson, elected Associate 1884, transferred to Retired Associateship 1933.

Alfred Brown, elected Licentiate 1911.

James N. Gilmore, elected Licentiate 1931.

Frederick W. Higginbotham, transferred to Licentiateship 1925.

William Morton, elected Licentiate 1931.

Laurence Walton Taylor, elected Licentiate 1931.

John Briggs, elected Licentiate 1911, transferred to Retired Licentiateship 1934.

George A. Chapman, elected Licentiate 1911, transferred to Retired Licentiateship 1934.

And it was resolved that the regrets of the Institute for their loss be entered on the Minutes and that a message of sympathy and condolence be conveyed to their relatives.

The following members attending for the first time since their election were formally admitted by the President:—

Fellows

Chas. W. Baker

Gerald E. Burgess

F. Milton Cashmore

Graham Crump

S. Colwyn Foulkes

S. C. Garrett

A. Christopher Goulder

Miss E. K. D. Hughes

A. J. Johnson

E. Oakley

Associates

W. A. L. Hopkins

H. R. D. Perryer

J. G. R. Sheridan

Licentiates

Harry E. Bettington

Cecil D. Pickersgill

Maurice S. Rivett

A. W. Staniland

G. C. Wilkins

The Secretary having read there part of the Scrutineers on the result of the Annual Election for the Council, the President declared that the President, Members of Council and the Honorary Auditors for the Session 1939-1940 were duly elected in accordance therewith.

On the motion of the President, a vote of thanks was passed by acclamation to the Scrutineers for their labours, and was briefly responded to by Mr. Ernest G. Allen [F.], Chairman of the Scrutineers.

The formal business of the meeting having concluded, the President invited members to join in a private and informal discussion on subjects of professional interest or difficulty.

The proceedings closed at 10.10 p.m.

Architects' and Surveyors' Approved Society

ARCHITECTS' ASSISTANTS' INSURANCE FOR THE NATIONAL HEALTH AND PENSIONS ACTS

Architects' Assistants are advised to apply for the prospectus of the Architects' and Surveyors' Approved Society, which may be obtained from the Secretary of the Society, 113 High Holborn, London, W.C.1.

The Society deals with questions of insurability or the National Health and Pensions Acts (for England) under which, in general, those employed at remuneration not exceeding £250 per annum are compulsorily insurable.

In addition to the usual sickness, disablement and maternity benefits, the Society makes grants towards the cost of dental or optical treatment (including provision of spectacles).

No membership fee is payable beyond the normal Health and Pensions Insurance contribution.

The R.I.B.A. has representatives on the Committee of Management, and insured Assistants joining the Society can rely on prompt and sympathetic settlement of claims.

Architects' Benevolent Society

66 PORTLAND PLACE, W.1

FOUNDED 1850

The object of the Society is to afford assistance to architects, architects' assistants, and their widows and children by means of grants and pensions.

Subscriptions and donations of any amount are urgently needed. An annual subscriber of £1 is. is entitled to recommend annually two applicants for relief.

A.B.S. INSURANCE DEPARTMENT

THE ARCHITECTS' SPECIAL MOTOR CAR INSURANCE AT LLOYD'S

In conjunction with a firm of Lloyd's Insurance Brokers the Architects' Benevolent Society's Insurance Committee have devised a Special Motor Car Policy for Architects. This policy and the special advantages to be gained from it are available only to members of the Royal Institute of British Architects and its Allied and Associated Societies.

Special features include:

1. *Agreed values.* In the event of a total destruction or loss, insured value is agreed as the replacement value.
2. A cumulative no-claim bonus from 15 per cent., rising to 33½ per cent. in the fourth year.
3. No extra premium for business use of car by the insured in person.

4. Free manslaughter indemnity up to £250.

5. Free cover for loss of luggage, rugs, etc., up to £20.

SPECIMEN RATES FOR FULL COMPREHENSIVE POLICIES ARE GIVEN BELOW. OTHER RATES QUOTED ON APPLICATION

	Premium
	£ s. d.
7 h.p. Austin, valued at £100	10 15 0
9 h.p. Standard, valued at £100	11 10 0
11 h.p. Morris, valued at £150	12 5 0
20 h.p. Hillman, valued at £300	16 5 0

(The rates shown do not apply to cars garaged in London and Glasgow and Lancashire manufacturing towns; rates for these areas will be quoted on application.)

All enquiries with regard to the Special Motor Car Policy for Architects should be sent to the Secretary, A.B.S. Insurance Department, 66 Portland Place, W.1.

It is desired to point out that the opinions of writers of articles and letters which appear in the R.I.B.A. JOURNAL must be taken as the individual opinions of their authors and not as representative expressions of the Institute.

Members sending remittances by postal order for subscriptions of Institute publications are warned of the necessity of complying with Post Office Regulations with regard to this method of payment. Postal orders should be made payable to the Secretary R.I.B.A. and crossed.

Members wishing to contribute notices or correspondence must send them addressed to the Editor not later than the Tuesday prior to the date of publication.

Back numbers of the JOURNAL can be obtained at the price of 1s. 6d., including postage throughout the world. For orders of more than six copies discounts are given. Orders must be prepaid.

R.I.B.A. JOURNAL

DATES OF PUBLICATION. — 1939. — 17 July; 14 August; 18 September; 16 October.

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Vertical Text

BUILDING SCIENCE

QUESTIONS *and* ANSWERSNOTES FROM THE INFORMATION BUREAU OF
THE BUILDING RESEARCH STATION*

(4th Series, No. 12)

From time to time there have been included in these Notes discussions of selected topics not necessarily related to specific questions addressed to the Station, but rather a reflection of a body of inquiries submitted. There are a number of such topics which it is thought could usefully be discussed in that way, and it has therefore been decided that for a period of twelve months or so these Notes shall take the form essentially of such discussions. It is not intended, however, to adhere rigidly to this form, for any inquiries of special interest that may be received by the Station during the period will be dealt with as before.

DIRECTOR OF BUILDING RESEARCH

CONCRETE IN SULPHATE-BEARING CLAYS AND GROUND
WATERS.—PART I

The following note is a summary of available knowledge—the treatment is not exhaustive. It is presented in the hope that it may be found useful as a convenient résumé of existing information.

The deterioration of concrete in sulphate-bearing soils and ground waters has in recent years received increasing attention from engineers, and numerous inquiries have been addressed to the Station as to suitable materials or methods of construction for use under such circumstances. It is not, at the present time, possible to give any precise answer as to what is the cheapest form of construction which, in any particular case, can be considered as possessing adequate durability. For this reason a large scale programme of field and laboratory tests is being carried out in co-operation with the Institution of Civil Engineers, but inevitably results cannot be available from this work for some years at least, and indeed, the field tests are to extend over a period of ten years. Nevertheless, it is necessary at the present time to give some guidance, recognising that any recommendations made are based on knowledge which is very incomplete and must later be subject to revision when more information is available. It follows that any recommendations made at present should err on the side of excessive rather than insufficient precautions.

In the present note a brief survey is given of the conditions under which concrete may suffer deterioration in sulphate-bearing grounds and of

the measures which can be adopted to safeguard the concrete against serious attack by the sulphate salts. The recommendations made should only be regarded as a general guide, and not as an invariable set of rules.

Various sulphate salts are found in some clay sub-soils and in the ground waters contained in such soils. The most important of these salts are calcium sulphate (gypsum), magnesium sulphate and sodium sulphate. While no detailed information can be given as to the areas in which these salts may occur it is known that they are to be found in appreciable quantities in some parts, though not all, of the London clay and clays belonging to the Lower Lias, Oxford, Kimmeridge and Keuper Marl formations. The top few feet of a sulphate-bearing clay sub-soil are often, though not always, relatively free from sulphate salts, owing to gradual leaching by water, and considerable amounts are then only found at depths from three to six, or even more, feet below the surface.

Sulphate salts are not acidic and normally the ground waters in which they are found will be neutral or even slightly alkaline. Free acids will rarely be present in clay soils of the types mentioned above, but they may be found in conjunc-

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tion with sulphate salts in marsh areas. The case where both free acids and sulphate salts are present is not considered in the present note.

Sulphate salts have a destructive action on Portland cement concrete and it is necessary when placing concrete in ground containing appreciable amounts of sulphate to take measures to ensure its durability.

The rate of attack of sulphate salts on concrete depends on the following factors:—

1. Amount and nature of the salts present.
2. The general level of the water table in the ground and its seasonal variation.
3. The type and quality of the concrete concerned, and the form of construction involved.

These points will now be considered in detail.

1. AMOUNT AND NATURE OF THE SALTS PRESENT

The sulphate salts occur as crystals, sometimes too small to be visible to the eye, in the clay and become dissolved in the ground waters. Calcium sulphate (gypsum) has only a low solubility in water and the maximum amount which can be dissolved is 200 parts calcium sulphate per 100,000. In analyses of soils and waters, sulphates are usually recorded in terms of equivalent sulphur trioxide. The above mentioned proportion of calcium sulphate corresponds to about 120 parts of sulphur trioxide (SO_3) per 100,000. In clays containing much gypsum the ground water may contain nearly this amount. Sodium and magnesium sulphates are very soluble in water and can give rise to considerably larger amounts of sulphur trioxide in the ground water.

Concrete is not directly attacked by the solid sulphate salts, but only by their solutions in water. The amount of sulphate salts present in the clay represents therefore the total reserve potentially available to attack concrete, but it is the amount dissolved in the ground water which determines the rate of attack. The amount in solution in the ground water will depend on various factors such as the drainage of the clay and the rate at which water passes through it and often varies much with weather conditions, and also between quite closely adjacent positions over a site.

At similar concentrations in terms of parts sulphur trioxide per 100,000 it is doubtful if there is any major difference in the rate of attack of the different sulphate salts on Portland cement concrete. Since sodium and magnesium sulphates are so much more soluble in water than calcium sulphate their concentrations in the ground water can, however, vary much more widely than that

of the latter salt, and they must therefore be regarded as potentially more dangerous.

2. WATER LEVEL AND ITS VARIATION

Concrete is not attacked in dry ground containing sulphate salts and the presence of water is essential to the action. Further as a sulphate salt in solution in the ground water attacks the concrete it is removed from the water. The rate of attack can therefore be considered as dependent both on the amount of sulphate present in the water and the rate at which it is replenished. The latter is likely to be much increased by movement in the water caused either by drainage or by fluctuations in the level of the water table.

In the case of pipe lines laid at a gradient, some flow of ground water along the line tends to occur and sulphate-bearing waters can by this means be carried from a sulphate-bearing clay to a non-sulphate-bearing area at a lower level. In a more restricted manner the same may hold true for shorter excavations.

3. TYPE AND QUALITY OF CONCRETE AND FORM OF CONSTRUCTION

The attack of sulphate-bearing waters on concrete proceeds inwards from the surface and the rate at which it occurs is dependent on the ease with which the water can penetrate into the concrete. The density and impermeability of the concrete is thus a very important factor. Concrete which is subjected to a one-sided water pressure is much more vulnerable since the sulphur-bearing water tends to be forced through the concrete. When water pressure on one side is combined with exposure to air, with free evaporation, on the other the conditions may become still more severe. If water percolates through the concrete to the exposed face and evaporates at that face, it leaves the sulphate salts behind, thus increasing the concentration of those salts in the water in the concrete. The danger from this effect is obviously greater with the very soluble magnesium and sodium sulphates than with calcium sulphate.

A similar, but less severe, case is to be found in a partly buried concrete mass when water is drawn up by capillary forces from the portion below ground and evaporates at the exposed surface.

The risk of attack on concrete in sulphate-bearing grounds is thus dependent on the nature of the concrete structure, as well as the general ground conditions and the type and quality of the concrete.

The resistance of concrete to water penetration

depends on all those factors which determine quality of concrete, i.e. richness of mix, water content, grading of aggregate, methods of mixing and placing and also the age of the concrete. Cast-in-situ concrete is more vulnerable than precast units since it is exposed while in the green state to the destructive action of the sulphate salts.

Leaving out of consideration the type of concrete structure involved, concrete may be arranged in the following order of decreasing vulnerability:—

1. Lean ballast concretes (1 : 6 or leaner) cast-in-situ.
2. Normal concretes of about 1 : 2 : 4 cement : sand : coarse aggregate cast-in-situ.
3. Precast units not leaner than a 1 : 2 : 4 mix.

The resistance of concretes to sulphate attack varies widely with the type of cement used. Portland cements themselves vary considerably in their resistance to attack, but there is unfortunately no rapid method for testing this property. In general the lower the alumina content and the higher the iron oxide content of the Portland cement the greater is the resistance, but other factors involved in the burning of the cement also play an important part. A considerably greater resistance to attack, though not absolute immunity, is obtained by the use of pozzolanic materials mixed with the Portland cement. Materials of this type include various natural products imported from abroad, such as trass, and artificial materials which can be produced, for instance, by burning clays under suitable conditions. The use of concretes containing as cement a mixture of Portland cement and a pozzolana offers a very useful and not unduly expensive means of protection when the conditions to exposure to sulphate attack are not too severe.

The strength of a Portland cement concrete over the first few weeks is, under moist conditions, reduced by substitution of pozzolana for Portland cement by an amount roughly equivalent to the extent of the substitution. At long ages (e.g. six months to a year), however, the strength approaches or exceeds that of the Portland cement concrete. Under dry conditions, as for example thin concrete members above ground, the strength development of pozzolanic cements is much less satisfactory. Under cold weather conditions the rate of development of strength of pozzolanic cements is reduced more than that of Portland cements, while in hot weather conditions the reverse holds and the acceleration in strength development is greater than with Portland cements.

The resistance to attack by sulphate salts increases, within limits, as the proportion of pozzolana is increased, and it is necessary to strike some balance between the strength and sulphate resistance requirements. Mixes containing up to 50 per cent pozzolana, 50 per cent Portland cement are sometimes used, but, owing to the relatively low strength of this mix at early ages, a proportion of 30 to 40 per cent pozzolana is more common. The proportions of concrete containing pozzolana should not be leaner than one part pozzolanic cement (i.e. Portland cement plus pozzolana) to six parts fine and coarse aggregate.

The most resistant type of cement at present available is high alumina cement. This cement must not be confused with Portland cements of high alumina content for it is an entirely different material. Well made high alumina cement concrete can, from years of experience, be regarded as immune from attack, but it is more costly. It should normally be used in a mix of about 1 : 2 : 4 proportions. Lean mixes are not immune from attack but no advantage is to be gained by the use of mixes richer than 1 : 2 : 4.

Other measures sometimes adopted have as their aim the prevention of contact between ground water and concrete. These include the use of bituminous paints and asphaltic treatments of the surface in the case of precast units. Some measure of protection can be obtained with bituminous paints (bituminous emulsions should not be used), but thin coatings of this type have a limited life in wet ground and it is very doubtful if they can be relied upon to last more than a very few years. Nevertheless they may be useful in postponing the commencement of attack until the concrete is very well matured. Thick asphalt coatings may be expected to have a very high durability, but they are costly. Cast-in-situ concretes have sometimes been placed on, and the sides protected with, bituminised paper or hessian with the object of restricting access of the ground waters to the concrete until it has had time to mature. It is doubtful, however, if measures of this type can be regarded as adequate except under relatively mild conditions of exposure to sulphate attack.

NOTES ON CONCRETE MIXES

The cement : sand : aggregate ratios given in Parts I and II of this Note refer to weight proportions with dry aggregates. The corresponding volume proportions for sand and gravel aggregates in mixes of one part cement to six parts combined aggregates by weight are approximately as shown overleaf:—

Weight Proportions	Volume Proportions (1 cu. ft. cement = 90 lb.)	
	Dry Sand (No bulking)	Damp Sand (30% bulking)
1 : 2 : 4	1 : 1 $\frac{3}{4}$: 4	1 : 2 $\frac{1}{4}$: 4
1 : 2 $\frac{1}{2}$: 3 $\frac{3}{4}$	1 : 2 : 3 $\frac{3}{4}$	1 : 2 $\frac{1}{2}$: 3 $\frac{3}{4}$
1 : 2 $\frac{1}{2}$: 3 $\frac{1}{2}$	1 : 2 $\frac{1}{4}$: 3 $\frac{1}{2}$	1 : 2 $\frac{3}{4}$: 3 $\frac{1}{2}$

Part II of the note will deal with the precautionary measures that may be used where precast or *in situ* concrete have to be placed in the ground in districts where, from previous experience or examination of the soil, it is thought that some risk of attack exists. Details are given of the method of taking proper samples of soils and ground water for analysis.

PART II

PRECAUTIONARY MEASURES

Information on the durability of concretes of different types in sulphate-bearing grounds is at present far from adequate. It is therefore not possible for any particular case to state with any precision the least costly measures which can be relied on to ensure durability. Despite the uncertainty attaching to the problem it is desirable to attempt to formulate some recommendations, realising that, as these are based on knowledge which is very incomplete, they must be subject to revision as more knowledge becomes available and that they should tend to err on the side of excessive rather than insufficient precautions. The recommendations should moreover be regarded only as a general guide and not as an invariable set of rules.

The least severe condition of exposure is probably that of concrete completely buried under conditions such that the excavation does not form a channel along which a flow of ground water is likely to occur. Foundations to buildings will usually fall into this class.

For concretes subjected to severer conditions of exposure, e.g. a one-sided water pressure, increased protective measures will be required.

It will be convenient to classify soil conditions and consider the protective measures needed. Methods for sampling clay sub-soils and ground waters are given later and at this stage only the results of the examination will be considered. It must, however, be mentioned here that both clays and ground waters often vary very widely in the amount of sulphate salts they contain over even a small area of ground; further in the case of water samples the concentration found in dry weather may, in extreme cases, be several times as large as that found in wet weather. The results of tests on selected samples must, therefore, only be taken as a general indication of the site conditions and not of the highest concentrations of sulphate salts that may occur.

Sulphate salts are found in very small amounts in most clays and ground waters from clay sub-

soils and it is necessary to formulate limits, however tentative, for the amounts where protective measures become necessary.

The various limits must be placed on the low side since, as mentioned above, the amount of sulphate salts present may rise above the values found in test samples. Though the results of ground water analyses may be preferred to those of the clay as a criterion, it is desirable to give limits for both since ground water samples cannot always be obtained. Thus a clay may not yield any water in a trial excavation or borehole though later, under other seasonal conditions, for instance, it may become water-bearing. In some cases it may be found that the results of the ground water and clay analyses lead to different classifications of the site in terms of the limits suggested below, and in such cases the more severe classification should be adopted.

1. Sites with Low Sulphate Content.

The limits suggested are:—

Ground Water below about thirty parts sulphur trioxide per 100,000.

Clay* below about 0.2 per cent sulphur trioxide.

2. Sites of Moderate Severity in Regard to Risk of Sulphate Attack.

The limits suggested are:—

Ground Water about thirty to one hundred parts sulphur trioxide per 100,000.

Clay* 0.2 to 0.5 per cent sulphur trioxide.

3. Sites with High Risk of Sulphur Attack.

The limits suggested are:—

Ground Water above one hundred parts sulphur trioxide per 100,000.

Clay* above 0.5 per cent sulphur trioxide

*Calculated on weight of clay in air dry state.

In this classification no attempt is made to differentiate between the various sulphate salts. It will often be found that in classes (1) and (2) the main salt present is calcium sulphate, while in class (3) either magnesium or sodium sulphate, or both, will be present in addition.

For sites falling in class (1) no special measures will usually be needed, except that for conditions near the upper limit, e.g. above say twenty parts SO_3 per 100,000 in the ground water, the use of lean Portland cement concrete (e.g. 1 to 7-9 ballast) cast-in-situ involves some risk and richer mixes, e.g. 1 : 2 : 4, may be desirable in positions where normally the leaner mix would be used.

For class (2) the protective measures advisable will depend on the nature of the concrete work concerned. Precast Portland cement concrete products of high quality made with a rich mix (e.g. 1 : 1½ : 3) and of low permeability are only likely to suffer any serious attack over a period of very many years if completely buried. Similar rich dense Portland cement concretes placed *in situ* are also unlikely to suffer seriously over, at any rate, a short term of years provided particular care is taken to ensure homogeneity of the mass. For most cast-in-situ work the use of a cement, such as pozzolanic cement, which is more resistant to sulphate attack, even though not entirely immune, is, however, desirable. In any case concrete mixes leaner than 1 : 2 : 4 should not be used and particular care should be paid that the aggregates are satisfactorily graded, and that the water content is not higher than is required for proper placing. The use of high alumina cement concrete, similarly made and in a similar mix, should afford complete protection and will also give high strengths should these be needed. For the most severe case, as in a retaining wall, where one side of the concrete is exposed to water pressure and the other to air, the use of alumina cement may be advisable. It may be noted that for cast-in-situ concrete some increase in the ratio of sand to coarse aggregate is of assistance in obtaining concrete of low permeability and one which is more readily placed as a homogeneous mass. Thus in place of the common 1 : 2 : 4 cement-sand-coarse aggregate proportions a mix of 1 : 2½ : 3½ or even 1 : 2½ : 3½ ratio may be suggested, unless the aggregate is unusually well rounded in shape.

It is assumed in this discussion of class (2) sites that the main sulphate salt present is gypsum. When magnesium or sodium sulphate is the main constituent, rather more precautions are probably needed and the use of any cast-in-situ Portland cement concrete is better avoided.

For class (3) the use of any Portland cement concrete involves serious risk of severe deterioration though it is again true that the densest precast products, as for example some types of concrete pipes, may only suffer to a serious extent over a long period of years. It is also questionable if pozzolanic cements can under these conditions be regarded as sufficiently immune from attack. For most types of work the use of high alumina cement concrete is to be recommended. Reliance under these conditions should not be placed on bituminous paint coatings to Portland cement concrete, but thick asphalt coatings (i.e. ½-¾ in. thick) applied hot to Portland cement concrete can be regarded as satisfactory provided the joints between units are properly protected when placing by running hot bitumen around them. This practice has been used in the case of concrete pipes.

The various suggestions made above are summarised in Table I.

The precautions to be taken in any particular work must of course depend not only on the factors outlined above, but also on the effective life desired from the work. In cases where a life of only a small number of years (say 5-10) is required the precautions could be relaxed, while in structures for which a life of a very long period of years is required and it is desired to eliminate, as far as can be foreseen, any risk of deterioration more stringent precautions can be taken.

THE SAMPLING OF CLAYS AND GROUND WATERS

Information may often be available whether sulphate salts are known to occur in a particular locality or clay formation. When this is known to be the case an examination of the site should be made. Useful information can also often be obtained by visual examination of the sides of an excavation and of the clay dug out.

Calcium sulphate (gypsum or selenite) crystals occur occasionally as rounded agglomerations of radiating colourless crystals, which may be up to one or two inches in diameter. More frequently they occur as separate crystals which may vary from microscopic size up to several inches in length scattered in the clay; such crystals can very often be recognised by their shiny appearance when a piece of clay is held up in the light. Other minerals of similar appearance are not likely to occur in clay, but the softness of gypsum crystals (they may be scratched by the finger nail) affords an additional method of identification when they are not too small.

TABLE I.
Classification of Sulphate Soil Conditions and Precautionary Measures.

Classification of soil conditions.	Sulphur Trioxide in ground water Parts SO_3 per 100,000.	Sulphur Trioxide in clay Per cent SO_3 .	Precautionary Measures.		
			Precast concrete products.	Buried concrete surrounded by clay.	Cast in-Situ Concrete.
1.	Less than 30	Less than 0.2	No special measures	No special measures except that use of lean concretes (e.g. 1 : 7 or leaner ballast concrete) is inadvisable if SO_3 in water exceeds about 20 parts per 100,000. In such cases use Portland cement mixes not leaner than 1 : 2 : 4, or, if special precautions desired, pozzolanic cement mixes not leaner than 1 : 2 : 4.	Concrete exposed to one-sided water pressure. No special measures except that when SO_3 in water is above 20 parts per 100,000 special care should be taken to ensure high quality of Portland cement concrete, using if necessary 1 : 1½ : 3 mixes. Alternatively pozzolanic cements may be used in mixes not leaner than 1 : 2 : 4.
2.	30 to 100	0.2 to 0.5	Rich Portland cement concretes, e.g. 1 : 1½ : 3; not likely to suffer seriously except over a very long period of years. Otherwise use pozzolanic or aluminous cement.	Rich Portland cement concretes, e.g. 1 : 1½ : 3 (unlikely to suffer seriously over a short period of years provided care is taken to ensure that a very dense and homogeneous mass is obtained. For most work, and particularly if the predominant salts are magnesium or sodium sulphates, pozzolanic cement concrete (not leaner than 1 : 2 : 4) or high alumina cement concrete (1:2:4) advisable.	Use of Portland cement concrete not advisable. Pozzolanic cement or preferably, high alumina cement recommended.
3.	Above 100	Above 0.5	The densest Portland cement concrete products obtainable not likely to suffer seriously over periods up to say 10-20 years unless conditions are very severe. Otherwise use high alumina cement concretes.	High alumina cement concrete recommended.	High alumina cement concrete recommended.

NOTES 1. Where "1 : 2 : 4" concrete mentioned other mixes of equivalent weight ratio of cement to total aggregate but with somewhat increased ratio of sand to coarse aggregate (e.g. 1 : 2½ : 3½ or even 1 : 2½ : 3½) may of course be used, sometimes with advantage.
2. With Portland cements of unusually high sulphate resistance rather more latitude could be allowed, but it would be necessary to obtain adequate assurance that the cements were of this type.

The occurrence of the crystals is usually sporadic and they may be found in isolated patches or seams in the clay, whilst elsewhere none is visible. Their presence, even in small amount, indicates the necessity for a laboratory examination of the samples of the subsoil.

When no crystals are observable an indication of the presence of sulphates is sometimes found in the formation of a white scum or efflorescence on the surface of the excavated clay as it dries. Such an efflorescence is again indicative of the need for laboratory examination.

The absence of any of the above indications cannot be taken as proof that sulphate salts are not present, and in cases where the site is in a region in which sulphates are known to occur an examination by a consultant chemist may still be advisable. The number of samples required will depend in part upon the variations which are apparent in the nature of the sub-soil and upon the nature of the concreting work in question. Thus samples of clay should be taken at different points from the sides of an excavation and at different levels down to the maximum depth at which the concrete will be laid. Each sample should consist of clay taken from a number of points covering the particular small area of which it is intended to be repre-

sentative and should amount in all to several pounds in weight. It should then be thoroughly mixed by battering down and breaking up repeatedly with a spade or small shovel until it is apparently uniform, and finally reduced in amount by cutting a cross upon it with a spade and retaining the alternate quarters. The mixing and quartering may be repeated if necessary until a suitable amount (1-2 pounds) for laboratory examination is obtained.

Water samples should be taken from water actually draining from the surrounding sub-soil into the excavation under examination; fresh rain water which has fallen directly into the excavation or run in from the surface is of no value as a sample. All samples should be collected in thoroughly clean bottles which have been thoroughly rinsed out with distilled water, and a rinsing with the water to be examined should be given if possible before filling. At least one pint of water should be collected. The depths of the excavation from which the water is collected should if possible correspond roughly with the base of the concrete that is to be placed.

The position and depth from which all samples are taken should be carefully recorded and the samples sent for analysis.

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